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EDITED BY

ISAAC HAYS, M.D.,

FELLOW OF THE PHILADELPHIA COLLEGE OF PHYSICIANS; MEMBER OF THE AMERICAN MEDICAL ASSOCIATION; OF THE AMERICAN PHILOSOPHICAL SOCIETY; OF THE ACADEMY OF NATURAL SCIENCES OF PHILADELPHIA; ASSOCIATE FELLOW OF THE AMERICAN ACADEMY OF ARTS AND SCIENCES,
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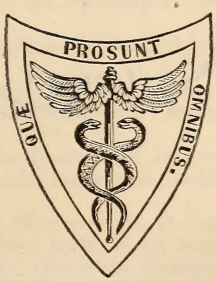
NEW SERIES.

VOL. XXXVIII.



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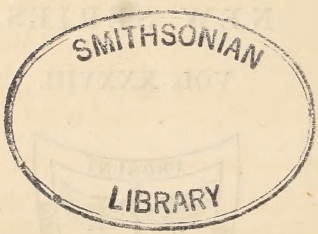

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TO READERS AND CORRESPONDENTS.

Several articles intended for this number have been unavoidably postponed in consequence of a press of matter; they shall receive early attention.

The following works have been received:—

On Infantile Mortality, and the Establishment of Hospitals for Sick Children. By Wm. Moore, A. B., M. B. Trin. Coll., Dub. Physician to the Hospital for Sick Children. Dublin, 1859. (From the Author.)

Woman—her Diseases and Remedies. A Series of Letters to his Class. By Charles D. Meigs, M. D., Prof. Midwifery and the Diseases of Women in Jefferson Med. Coll., etc. Fourth edition, revised and enlarged. Philadelphia: Blanchard & Lea, 1859. (From the Publishers.)

Elements of Medicine. A Compendious View of Pathology and Therapeutics, or the History and Treatment of Diseases. By Samuel Henry Dickson, M. D., Prof. of the Practice of Physic in Jefferson Med. Coll. Second edition, revised. Philadelphia: Blanchard & Lea, 1859. (From the Publishers.)

Anatomy, Descriptive and Surgical. By Henry Gray, F. R. S., Lecturer on Anatomy at St. George's Hospital. The drawings by H. V. Carter, M. D., late Demonstrator of Anatomy at St. George's Hospital. The dissections jointly by the Author and Dr. Carter. With three hundred and sixty-three Engravings on wood. Philadelphia: Blanchard & Lea, 1859. (From the Publishers.)

A Manual of Elementary Chemistry, Theoretical and Practical. By George Fownes, F. R. S., late Prof. Practical Chem. in Univ. Coll., London. From the seventh revised and corrected London edition. Edited by Robert Bridges, M. D., Prof. of Chem. in Philadelphia College of Pharm., etc. Philadelphia: Blanchard & Lea, 1859. (From the Publishers.)

Urinary Deposits: their Diagnosis, Pathology, and Therapeutical Indications. By Golding Bird, M. D., F. R. S. Edited by Edmund Lloyd Birkett, M. D., etc. etc. A new American from the fifth London edition. With eighty Illustrations on wood. Philadelphia: Blanchard & Lea, 1859. (From the Publishers.)

Transactions of the Medical Society of the State of New York for the year 1859. Albany, 1859.

Minutes of the Ninth Annual Meeting of the Medical Society of the State of North Carolina, held at Newberne, May, 1858. Wilmington, 1858.

Extracts from the Records of the Boston Society for Medical Improvement. By Fitch Edward Oliver, M. D., Secretary of the Society. Vol. III. Boston, 1859.

Proceedings of the Academy of Natural Sciences of Philadelphia. April, May, June, 1859.

Transactions of the New Jersey State Medical Society for 1859, held at the City of Trenton, Jan. 25th and 26th, 1859; being the 93d Annual Meeting of the Society. Newark, N. J., 1859.

A Practical Treatise on the Diseases of Infancy and Childhood. By T. H. Tanner, M. D. Philadelphia: Lindsay & Blakiston, 1859. (From the Publishers.)

Five Essays. By John K. Mitchell, M. D., late Prof. of Pract. of Medicine in Jefferson Med. Coll. Edited by S. Wier Mitchell, M. D. Philadelphia: J. B. Lippincott & Co., 1859. (From the Publishers.)

A Treatise on Baths; including Cold, Sea, Warm, Hot, Vapour, Gas, and Mud Baths; also, on Hydropathy and Pulmonary Inhalation, with a description of bathing in ancient and modern times. By John Bell, M. D., etc. etc. Second edition. Philadelphia: Lindsay & Blakiston, 1859. (From the Publishers.)

A Treatise on Gonorrhœa and Syphilis. By Silas Durkee, M. D., etc. With eight coloured plates. Boston: J. P. Jewett & Co., 1859.

Defects of Sight and Hearing: their Nature, Causes, Prevention, and Genera Management. By T. Wharton Jones, F. R. S., etc. etc. Edited, with additions, by Lawrence Turnbull, M. D., etc. Philadelphia: C. J. Price & Co., 1859. (From Lindsay & Blakiston.)

Fourth Annual Report on the Births, Marriages, and Deaths in the City of Providence for the year ending Dec. 31, 1858. By Edwin M. Snow, M. D., City Registrar. Providence, 1859. (From the Author.)

Report on the Nervous System in Febrile Diseases, and the Classification of Fevers by the Nervous System. By Henry Fraser Campbell, A. M., M. D., Prof. of Anat. in the Med. Coll. of Geo. Extracted from the Trans. of the Am. Med. Ass. Philadelphia, 1858. (From the Author.)

Report of the State of the New York Hospital and Bloomingdale Asylum for the year 1858. New York, 1859. (From J. Darrach, M. D.)

Report of the Board of Managers of the State Lunatic Asylum of the State of Missouri for the years 1857–8. Jefferson City, 1859.

Sixteenth Report to the Legislature of Massachusetts, relative to the Registry and Return of Births, Marriages, and Deaths, in the Commonwealth, for the year ending Dec. 31, 1857. By Oliver Warner, Sec. Com. Boston, 1859.

Forty-Second Report on the State of the Asylum for the Relief of Persons Deprived of the Use of their Reason. Philadelphia, 1859. (From Dr. Worthington.)

Report of the Committee of the City Council of Charleston, on the Origin and Diffusion of the Yellow Fever in Charleston in the summer of 1858. Charleston, 1859.

Report of the Board of Commissioners, and of the Superintendent of the Provincial Lunatic Asylum of New Brunswick for the year 1858. St. Johns, N. B.

Report of the Provincial Lunatic Asylum by the Commissioners appointed to Inquire into its Management. 1858.

Report of the Committee on the Internal Hygiene of Cities. (From Dr. J. Bell.)

Annual Address delivered before the Medical Society of the State of New York, and Members of the Legislature in the Capitol at Albany, Feb. 2d, 1859. By Thomas C. Brinsmade, M. D., of Troy, N. Y., President of the Society. Albany, 1859. (From the Author.)

Science and Success. A Valedictory Address delivered to the Medical Graduates of Harvard University, at the Annual Commencement, Wednesday, March 9, 1859. By Henry Jacob Bigelow, M. D., Prof. Surgery. Boston, 1859. (From the Author.)

The Progress and the Spirit of Medical Science. An Anniversary Discourse delivered before the New York Academy of Medicine, Nov. 25, 1858. By E. R. Peaslee, M. D. New York, 1859.

An Address delivered before the Eighth Graduating Class of the Medical Department of the University of Nashville. By J. W. Singleton, M.D. Nashville, 1859.

An Address upon the Life and Character of the late Dr. Frederick Dorsey, of Washington Co., Md. By John Thompson Mason. Baltimore, 1859.

Medical Heroism. Address before the Philadelphia Co. Med. Soc. delivered Feb. 24, 1859. By John Bell, M. D., at the close of his official term as President. Philadelphia, 1859.

The Identity of Dengue or Break-Bone Fever, and the Yellow Fever. By R. D. Arnold, M. D.; Prof. Theor. and Prac. Med. in Savannah Med. Coll. Savannah, 1859. (From the Author.)

Dengue, or Break-Bone Fever, as it appeared in Savannah in the Summer and Fall of 1850. By R. D. Arnold, M. D., etc. etc. Savannah, 1858. (From the Author.)

Annual Report and Circular of the New Orleans School of Medicine. June, 1859. New Orleans, 1859.

First Annual Announcement of the Medical Department of Lind University, at Chicago, Ill., for the College Session of 1859–'60. Chicago, 1859.

Announcement of the Medical Department of the University of the Pacific, San Francisco, California. Session 1859. San Francisco, 1859.

The following Journals have been received in exchange:—

Journal de la Physiologie de l'Homme et des Animaux. Publié sous la direction du Docteur E. Brown-Séquard. Jan., 1859.

Journal de Médecine de Bordeaux. Redacteur en chef: M. Costes. Feb., March, 1859.

Le Moniteur des Hôpitaux Revue Medico-Chirurgicale de Paris. Redacteur en chef: M. H. De Castelnau. April, May, June, 1859.

Edinburgh Medical Journal. March, April, May, 1859.

British Medical Journal. Edited by Andrew Wynter, M. D. March, April, May, 1859.

Dublin Hospital Gazette. March, April, May, 1859.

The British and Foreign Medico-Chirurgical Review. April, 1859.

The Journal of Psychological Medicine and Mental Pathology. Edited by Forbes Winslow, M. D. April, 1859.

The Glasgow Medical Journal. April, 1859.

Ophthalmological Hospital Reports, and Journal of the Royal London Ophthalmic Hospital. Edited by J. F. Streatfeild. January, 1858.

Edinburgh Veterinary Review, and Annals of Comparative Pathology. April, 1859.

The Dublin Quarterly Journal of Medical Science. May, 1859.

The Medical Chronicle. Edited by Wm. Wright, M. D., and D. C. MacCallum, M. D. April, May, June, 1859.

Buffalo Medical Journal. Edited by Austin Flint, Jr., M. D. April, May, 1859.

Southern Medical and Surgical Journal. Edited by Henry F. Campbell, M. D., and Robert Campbell, M. D. April, May, 1859.

The Virginian Medical Journal. Edited by Jas. B. McCaw, M. D., and J. Otis, M. D. April, May, June, 1859.

The American Journal of Dental Science. Edited by C. A. Harris, M. D., and A. S. Piggot, M. D. April, 1859.

The Cincinnati Lancet and Observer. Edited by E. B. Stevens, M. D., and John A. Murphy, M. D. April, May, June, 1859.

The Boston Medical and Surgical Journal. Edited by W. W. Morland, M. D., and Francis Minot, M. D. April, May, June, 1859.

The New Orleans Medical News and Hospital Gazette. Edited by Drs. D. W. Brickell and E. D. Fenner. April, May, June, 1859.

The American Journal of Insanity. Edited by the Medical Officers of the New York State Lunatic Asylum. April, 1859.

The New Orleans Medical and Surgical Journal, Edited by Bennet Dowler, M. D., W. Stone, M. D., Jas. Jones, M. D., S. E. Chaille, M. D., and W. C. Nichols, M. D. May, 1859.

The North American Medico-Chirurgical Review. Edited by S. D. Gross, M. D., and T. G. Richardson, M. D. May, 1859.

Charleston Medical Journal and Review. Edited by J. Dickson Bruns, M. D. May, 1859.

The New York Journal of Medicine. Edited by Stephen Smith, M. D. May, 1859.

The American Journal of Science and Arts. Conducted by Professors B. Silliman, B. Silliman, Jr., and Jas. A. Dana. May, 1859.

The Nashville Monthly Record of Medical and Physical Science. Edited by D. F. Wright, M. D., and R. O. Curry, M. D. April, May, June, 1859.

The Pacific Medical and Surgical Journal. March, April, May, 1859.

The Peninsular and Independent Medical Journal. Edited by Prof. A. B. Palmer, Moses Gunn, and Mr. F. Stearns. April, May, June, 1859.

The Savannah Journal of Medicine. Edited by J. S. Sullivan, M. D., Juriah Harris, M. D., and R. D. Arnold, M. D. May, 1859.

The American Medical Monthly. Edited by E. H. Parker, M. D., and J. H. Douglas, M. D. May, June, 1859.

American Journal of Pharmacy. Published by Authority of the Philadelphia College of Pharmacy. Edited by Wm. Procter, M. D. May, 1859.

St. Louis Medical and Surgical Journal. Edited by M. L. Linton, M. D., and W. M. McPheeters, M. D. May, 1859.

The Saint Joseph Journal of Medicine and Surgery. Edited by Drs. J. H. Crane, O. B. Knode, and G. C. Catlett. May, 1859.

American Druggists' Circular. May, June, 1859.

The Medical and Surgical Reporter. Edited by S. W. Butler, M. D., and R. J. Levis, M. D. April, May, June, 1859.

The New York Medical Press. Edited by J. L. Kiernan, M. D., and W. O'Meagher, M. D. April, May, June, 1859.

The Dental News Letter. Edited by J. D. White, D. D. S., and J. R. McCurdy, D. D. S. April, 1859.

The Belmont Medical Journal. March, April, May, 1859.

American Medical Gazette. Edited by D. M. Reese, M. D. April, May, June, 1859.

The Louisville Medical Gazette. Edited by L. J. Frazee, M. D. April, 1859.

The Maine Medical and Surgical Reporter. Conducted by W. R. Richardson, M. D., and R. W. Cummings, M. D. March, April, 1859.

Nashville Journal of Medicine and Surgery. Edited by Drs. W. K. Boling, R. C. Foster, and G. S. Blackie. April, May, June, 1859.

The Chicago Medical Journal. Edited by Daniel Brainard, M. D. March, April, May, June, 1859.

The Semi-Monthly Medical News. Edited by S. M. Bemis, M. D., and J. W. Benson, M. D. April, May, June, 1859.

The American Medical Monthly. Edited by Drs. E. H. Parker, J. H. Douglas, and L. H. Steiner. April, June, 1859.

Atlanta Medical and Surgical Journal. Edited by Jos. P. Logan, M. D., and W. F. Westmorland, M. D. April, May, June, 1859.

Oglethorpe Medical and Surgical Journal. Edited by Drs. H. L. Byrd, H. Steele, and V. H. Taleaferro. April, 1859.

New York Review of Medical and Surgical Science. Edited by Austin Flint, Jr., M. D. June, 1859.

Communications intended for publication, and Books for Review, should be sent, *free of expense*, directed to Isaac Hays, M. D., Editor of the American Journal of the Medical Sciences, care of Messrs. Blanchard & Lea, Philadelphia. Parcels directed as above, and (carriage paid) under cover, to John Miller, Henrietta Street, Covent Garden, *London;* or M. Hector Bossange, Lib. quai Voltaire, No. 11, *Paris*, will reach us safely and without delay. We particularly request the attention of our foreign correspondents to the above, as we are often subjected to unnecessary expense for postage and carriage.

Private communications to the Editor, may be addressed to his residence, 1525 Locust Street.

All remittances of money, and letters on the *business* of the Journal, should be addressed *exclusively* to the publishers, Messrs. Blanchard & Lea.

☞ The advertisement-sheet belongs to the business department of the Journal, and all communications for it should be made to the publishers.

To secure insertion, all advertisements should be received by the 20th of the previous month.

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XVI. Practical Observations on the Operations for Strangulated Hernia. By J. H. James, F.R.C.S., Consulting Surgeon to, and late Senior Surgeon of, the Devon and Exeter Hospital; Consulting Surgeon to the Exeter Dispensary. London, 1859. 8vo. pp. 95. 154

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XX. An Essay on Wasting Palsy; Cruveilhier's Atrophy. By William Roberts, B.A., M.D., Lond.; Physician to the Manchester Royal Infirmary, Fever Wards, and Lunatic Hospital; Lecturer on General and Morbid Anatomy and Physiology at the Manchester Royal School of Medicine, etc. With four lithographic plates. 8vo. pp. 210. London, 1858. 189

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XXI. Journal de la Physiologie de l'Homme et des Animaux. Publié sous la Direction du Docteur E. Brown-Séquard. Tome premier, Numero IV. Octobre, 1858. Tome deuxième. No. 5, Jan., 1859. 195

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Observations on Diphtheritis. By Willoughby F. Wade. B. A., M. B., T. C. D., Physician to the General Dispensary, etc. London, 1858. 8vo. pp. 32. 200

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XXXII. A Practical Treatise on the Diseases of Infancy and Childhood. By T. H. Tanner, M. D., F. L. S., Licentiate of the Royal College of Physicians, late Physician to the Hospital for Women, etc. 12mo. pp. 464. Philadelphia: Lindsay & Blakiston, 1859. 219

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ART. I.—*Experimental Researches relative to Corroval and Vao—Two New Varieties of Woorara, the South American Arrow Poison.* By WILLIAM A. HAMMOND, M. D., Assistant Surgeon U. S. Army, and S. WEIR MITCHELL, M. D., Lecturer on Physiology in the Philadelphia Medical Association. (Read before the Academy of Natural Sciences, Biological Department, May 16, 1859. Recommended for publication May 31, 1859.) With three wood-cuts.

THE history of the remarkable poison which we design to consider in the present memoir, has been so well detailed by M. Cl. Bernard,[1] that it would be useless for us to enter fully into this portion of the subject. We shall, accordingly, confine ourselves more particularly to an examination of those accounts which relate to the discovery and mode of preparation of the substance in question, and to the indication of a few statements which have escaped M. Bernard's attention.

Woorara was first introduced to the civilized world in 1595, by Sir Walter Raleigh,[2] on his return from Guiana. The following quotation describes graphically, but with much exaggeration, the action of the poison.

"There was nothing whereof I was more curious, than to finde out the true remedies of these poisonous arrowes; for besides the mortalitie of the wound they make, the partie shot indureth the most insufferable torment in the world, and abideth a most uglie and lamentable death, sometimes dying starke mad, sometimes their bowels breaking out of their bellies, and are presently discoloured as blacke as pitch, and so unsavoury as no man can endure to cure or attend them, and it is more strange to know that in all this time there was never Spaniard, either by gift or torment, that could attaine to the true

[1] Leçons sur les Effets des Substances Toxiques, &c., 1857, p. 238.

[2] Raleigh's Discoverie of Guiana. Printed for the Hakluyt Society. London, 1848.

knowledge of the cure, although they have martyred and put to invented torture I know not how many of them. But every one of these Indians know it not, no, not one among thousands, but their soothsaiers and priests who do conceale it and only teache it but from the father to the sonne."

Garcilasso de la Vega[1] states that the Indians of Peru poisoned their arrows with a species of herb, and that symptoms of poisoning were not produced till about three days after the wound was given; death followed in seven days afterwards, the sufferer raving, eating or gnawing his own flesh, and beating his brains against the wall.

Another kind of poison is spoken of by De la Vega, in which the decomposing matters of human flesh form an important constituent. Previous to the arrival of the Spaniards, the flesh of the natives was employed for this purpose, but conceiving the idea that the flesh of a red-headed Spaniard possessed more heat and virulency than that of their own people, they subsequently employed this material whenever it fell in their way.

De la Condamine[2] states that the poison used by the Indians of South America is extracted by means of heat from the juice of several plants, and especially from certain *lianes* [in Spanish, bejucos, in English, bindweeds]. He asserts that there are over thirty kinds of plants in the Ticunas poison.

Bancroft[3] is more explicit, and gives the following formula for the woorara :—

Bark of the root of the wooraro, six parts;
Bark of the warracobba corra, two parts;
Barks of the root of coranapi baketi, and of hatchybaly, of each one part.

"All these are to be finely scraped and put into an Indian pot and covered with water. The pot is then to be placed over a slow fire that the water may simmer for a quarter of an hour. After which the fluid is to be expressed from the bark by the hands, taking care that the skin is unbroken; this being done, the bark is to be thrown away and the juice evaporated over a moderate fire to the consistence of tar, when it is to be removed.

"The smallest quantity of this poison conveyed by a wound into the red bloodvessels of an animal, causes it to expire in less than a minute, without much apparent pain or uneasiness, though slight convulsions are sometimes seen near the instant of expiration."

According to Fermin,[4] the Indians of Surinam poison their arrows by dipping them to the height of two inches in the juice of a tree called *mancelinier*.

"As soon as an incision is made in this tree, a milky and acrid substance flows out, filled with particles so volatile that the poison is as prompt as violent. It remains active for a long time after the arrows are dipped into it, as I have myself proved in several instances, by shooting animals with arrows which had been poisoned four or five years previously. Death ensued in half an hour after the wounds were inflicted. I have these arrows still in my possession, and

[1] History of Peru. Chapter 37, p. 741.
[2] Relation abrégé d'un Voyage fait dans l'Intérieur de l'Amérique Méridionale, etc. Mémoires de l'Académie des Sciences, t. xii., 1745, p. 391.
[3] Essay on the Natural History of Guiana. London, 1769, p. 288.
[4] Description Générale Historique, Géographique et Physique de la Colonie de Surinam. Amsterdam, 1769, p. 52.

have no doubt that the poison is as active as ever. To show how pernicious it is when recent, the following experiment is adduced:—

"In order to convince the Spaniards, an Indian king wounded a child twelve years of age, slightly in one of the toes, with a poisoned arrow, and immediately ordered the surgeons whom he had summoned, to amputate the limb. This was scarcely done when the Spaniards saw the child expire, not in consequence of the operation, as was fully verified, but from the effects of the poison which was suddenly thrown into the mass of the blood, and had rapidly reached the most important organs, before relief could be afforded."

Humboldt[1] gives a full account of the woorara, and denies many of the absurd statements of previous writers. He was present during the manufacture of the poison at Esmeralda, and states that it is derived from the bark and alburnum of the bejuco de mavacure, a species of bind-weed, belonging to the strychnos family. The fresh juice of this plant is not regarded as poisonous, probably, as Humboldt states, on account of its not being in a concentrated condition. The manner of preparing the poison is as follows:—

"A cold infusion is first prepared by pouring water on the fibrous matter which is the ground bark of the *mavacoure*. A yellowish water filters during several hours, drop by drop, through the leafy funnel. This filtered water is the venomous liquor, but it acquires strength only when it is concentrated by evaporation, like molasses, in a large earthen pot. The Indian from time to time invited us to taste the liquid; its taste, more or less bitter, decides when the concentration by fire has been carried sufficiently far. There is no danger in this operation, the *curare* being deleterious only when it comes into immediate contact with the blood. The vapours, therefore, which are disengaged from the pans are not hurtful, notwithstanding what has been asserted on this point by the missionaries of the Orinoco."

In order to give body to the extract, another vegetable juice of a very glutinous character is added. The mass thus formed constitutes the curare of commerce.

Another species of the poison prepared entirely from the root is less active.

According to Waterton,[2] the woorara is prepared by the Macousi Indians in the following manner.

The materials required are the woorali vine, a bitter root, one or two bulbous plants, two species of poisonous ants, some strong Indian pepper, and the fangs of the labarri and corra-couchi snakes. Having procured these materials, the Macousi proceeds as follows:—

"He scrapes the woorali vine and bitter root into thin shavings, and puts them into a kind of colander made of leaves; this he holds over an earthen pot and pours water on the shavings; the liquor which comes through has the appearance of coffee. When a sufficient quantity has been procured, the shavings are thrown aside. He then bruises the bulbous stalks and squeezes a proportionate quantity of their juice through his hands into the pot. Lastly, the snakes' fangs, ants, and pepper are bruised and thrown into it. It is placed then on a slow fire, and as it boils more of the juice of the woorali is added ac-

[1] Personal Narrative of Travels to the Equatorial Regions of the New Continent during the years 1799–1804. 2d edition. London, 1827, vol. v. p. 519.

[2] Wanderings in South America, p. 51.

cording as it may be found necessary, and the scum is taken off with a leaf; it remains on the fire till it is reduced to a thick syrup of a dark brown colour. As soon as it has arrived at this state, a few arrows are poisoned with it to try its strength."

Schomburgk[1] asserts with much confidence that the woorara is prepared entirely from vegetable substances, the chief of which is the bark of the *strychnos toxifera.* According to this author, the following experiment was instituted by his brother: A gallon of water was added to two pounds of the bark of the *strychnos toxifera*, and allowed to remain for twenty-four hours. Half of the fluid, which was already of a brown colour, was then put into another vessel and evaporated over a slow fire to a syrupy consistence, the remaining half of the fluid being added as evaporation progressed. Two chickens were then wounded with instruments charged with the extract, one in the foot, the other in the neck. Symptoms of poisoning were evident in five minutes. The first died in twenty-seven minutes, the other in twenty-eight minutes after the infliction of the wounds. It is thus shown that the extract of the bark of the *strychnos toxifera* alone, when introduced into the circulation, is speedily fatal.

Schomburgk moreover had an opportunity, as he states, of witnessing the preparation of the woorara by an Indian. According to the account which he gives, three species of the *strychnos* enter into its composition, besides six other plants. No animal matter of any kind was used in its manufacture.

According to Osculati,[2] the poison prepared by the Indians of the province of Esmeralda, and which is called *ciguela* is extracted from a tree, and is not to be compared in virulence with the ticunas. The ciguela will kill a small animal in about ten minutes, but is not fatal when introduced into the human system, causing only pustules and malignant ulcerations. He also refers to another arrow poison prepared by the Colorados.

Osculati[3] also states that the Orekones and Ticunas are celebrated for the manufacture of certain active poisons which kill in two or three minutes. These poisons vary very much in composition among the several tribes. The *ticunas*, or *huarare*, mixed with the *lamas*, a poison prepared by the Lamas Indians, forms a toxic compound fatal to all animals. The ticunas alone is not fatal to quadrupeds or birds. The lamas is considered to be more active, but even this is not fatal to quadrupeds. In a note it is stated that having sent a few small fragments of the poison to Prof. Luigi Patellini, experiments were instituted with it by this gentleman. A guinea pig, poisoned with it, died in about five minutes in tetanic convulsions. The temperature of the body fell at once.

Dalton[4] repeats Waterton's account of the method of manufacturing the

[1] Reisen in Britisch Guiana. Leipzig, 1847. Band i., s. 445 et seq.
[2] Esplorazione delle Regione Equatoriale. Milano, 1850. p. 108.
[3] Op. cit., p. 207.
[4] History of British Guiana. London, 1855. Vol. i. p. 68.

woorara, and adds little if any additional information on the subject. He also states, after Hartsinck, that the Indians test the virulence of the poison by shooting arrows charged with it into trees. If the leaves drop off or wither within three days it is deemed sufficiently powerful.

It is highly probable, as Tschudi[1] asserts, that the poison used for weapons by the South American Indians varies with every tribe. This traveller declares that, notwithstanding all assertions to the contrary, animal poisons do enter into the composition of the arrow-poison used by the Indians of Peru. His evidence, however, is only of a hearsay character, as he never witnessed the preparation.

Herndon[2] who, however, does not seem to have paid particular attention to this point, but whose evidence, as far as it goes, is in every way reliable, asserts that the arrow-poison used by the Indians of the Amazon is of a vegetable character, and prepared from the juice of a creeper called *bejuco de ambihuasca* mixed with *aji* or strong red pepper, *barbasco*, *sarnango*, and any other poisonous substances known to the Indians.

Taking the accounts of the several authors we have quoted, as well as the evidence of others who have written on the subject, into consideration, we cannot avoid coming to the conclusion that a great deal of uncertainty still exists relative to the substances and method used in the preparation of the woorara. The earlier accounts on this point are so distorted with manifestly erroneous ideas, and so exaggerated in their detail, that we can place but little reliance upon them. Among later writers, Schomburgk is perhaps more to be depended upon than any other, both on account of general accuracy and high scientific attainments, but it is almost certain that every tribe has its own distinct poison, differing more or less from that of every other tribe. The evidences we have to submit on this point, from our own researches, will, we think, abundantly establish the fact of the different physiological effects resulting from poisoning in the different specimens of woorara, and consequently clearly indicate a difference in composition.

Physical and Chemical Properties.—The woorara obtained by Bancroft[3] is stated by him to have possessed the following properties: It was liquefiable by heat, and dissolvable in water, alcohol, hydrochloric acid and liquor ammoniæ, as also in blood, saliva, &c., except a very small part which subsided both in a spirituous and aqueous menstruum, and consisting, as he thinks, of earthy particles foreign to the composition. It united with acids without emotion or change of colour. On mixing it with alkalies, no ebullition was perceptible, but the colour changed from a reddish brown to a yellowish brown. A few grains mixed with as many

[1] Travels in Peru. English edition. London, 1847, p. 407.
[2] Exploration of the Valley of the Amazon. By Lieut. W. Lewis Herndon, U. S. Navy. Washington, 1853, p. 140.
[3] Op. cit., p. 291.

ounces of human blood, entirely prevented a separation of serum and crassamentum, and the whole mass continued in a state of fluidity.

The first reliable and thorough examination made of the woorara, and one which even yet has not been excelled in completeness, was that of MM. Roulin and Boussingault.[1] The specimen examined by these chemists was obtained from the Rio Negro. It was a solid extract, black, of a resinous appearance, of a brown colour when reduced to powder, and of an intensely bitter taste. This bitterness was unaccompanied by acridity or sharpness. It burned with difficulty, and in consuming gave off no odour of organic nitrogenous substances.

It was but slightly soluble in sulphuric ether, more so in alcohol, forming a beautiful red and very bitter tincture. In water it was soluble to a considerable extent, forming an intensely bitter infusion, of slight acid reaction to litmus paper.

By further investigation, MM. Roulin and Boussingault arrived at the conclusion that no strychnia was present. They, however, obtained an alkaline principle soluble in water, for which the name of *curarin* has been proposed. This substance they obtained by the following procedure:—

The woorara was reduced to powder, and treated repeatedly with boiling alcohol. The alcoholic extract was evaporated, and the residue treated with water, which dissolved the active principle, leaving nothing but a little resinous matter. The aqueous solution was then decolorized by animal charcoal, and treated with infusion of galls. A beautiful whitish-yellow flaky precipitate was thrown down.

The precipitate thus obtained was well washed, heated to ebullition in water, and dissolved by the addition of oxalic acid. The acid liquor was then supersaturated by magnesia and filtered. It was again evaporated to dryness, and the residue dissolved in alcohol. This solution was concentrated and spontaneously evaporated to a syrupy consistence. It was then further concentrated by evaporation *in vacuo*.

Thus obtained, the *curarin* was a solid transparent mass, of an excessively bitter taste, and possessed in an eminent degree of all the virulence of the woorara. It was not crystallizable, was of a pale-yellow colour, and strongly attractive of moisture from the atmosphere. It formed salts with sulphuric, nitric, hydrochloric, and acetic acids, none of which were crystallizable.

MM. Roulin and Boussingault are of the opinion that the normal acid of the woorara is the acetic.

The results of the examination made by the above named chemists were subsequently confirmed by MM. Pelletier and Petroz.[2]

Heintz[3] has also examined the woorara chemically. By adding tannic acid to the aqueous solution of this substance, he obtained an abundant

[1] Examen Chimique du Curare, Poison des Indiens de l'Orinoque. Annales de Chimie et de Physique. Tome xxxix., 1828, p. 24.

[2] Examen Chimique de Curare, Annales de Chimie et de Physique, tom. xl., 1829, p. 213.

[3] Reisen in Britisch Guiana. Von Richard Schomburgk. Band i. s. 452 (note).

precipitate soluble in boiling water. This was taken from the filter, boiled with magnesia, and then evaporated to dryness. The extract thus obtained was then treated with alcohol, to remove it from any insoluble salts of magnesia, and the solution again evaporated to dryness. By this means a yellowish-brown extract was obtained, possessing no alkaline reaction, but endowed in an eminent degree with the toxic principle of the woorara. Heintz does not regard this extract as at all pure. He afterwards employed both the bichlorides of mercury and platinum to effect the precipitation, but with no better success, a yellowish-brown extract being still obtained.

By Lassaigne's method Heintz convinced himself that the extract contained nitrogen. He also found sugar, gum, resin, extractive matter, tannic and gallic acids, and traces of saline combinations with organic acids—probably the tartaric and oxalic.

He was unable to find the least trace of strychnia.

Dr. Brainard,[1] of Chicago, asserts that by an analysis, undertaken at his suggestion, formic acid and a proteinaceous substance were detected in the woorara. None of the details of the analysis are given, and we must therefore await further particulars before accepting such a statement.

Dr. Brainard,[2] in conjunction with Dr. Green, of New York, presented a communication to the French Academy of Sciences, in which the opinion is expressed that the poisonous action of the woorara is probably due to the venom of certain reptiles. Boussingault,[3] however, in the debate which followed, denied the existence of any animal matter in the woorara; and in a subsequent paper, in which the whole subject of woorara is well discussed, Dr. Green[4] doubts the existence of animal poison in the substance in question.

From our own investigations, as well as from those we have referred to, we think it highly improbable that the activity of the woorara is due to animal matters. Doubtless it is true that some Indians introduce the fangs, livers, &c., of venomous reptiles into their arrow poison, but it is scarcely possible that such substances, even if poisonous in the first instance, would retain their activity through the process of manufacture which the woorara undergoes. When we come to detail our own observations, we shall return to this point, so far as it relates to the varieties of this poison with which we have experimented.

Physiology.—The earliest recorded experiments with woorara, of a systematic character, to which we have been able to refer, are those of De la

[1] Smithsonian Report, 1854, p. 123 et seq.
[2] Comptes Rendus, tom. xxxviii., 1854, p. 411 et seq.
[3] Op. cit., p. 414.
[4] American Medical Gazette, vol. vii. No. 1 (new series), Jan., 1858, p. 2, et seq. See also vol. vi. No. 5, May, 1855, and vol. vi. No. 7, July, 1855, for Dr. Green's other important papers on this subject.

Condamine,[1] who relates that his observations were made with arrows which he had possessed for more than a year.

In presence of several high personages a chicken was slightly wounded with a small arrow charged with the poison. It died in seven minutes and a half. Another, pricked in the wing with a similar arrow, died very soon in convulsions, notwithstanding sugar, an alleged antidote, was employed. A third, similarly wounded, recovered, the antidote having been immediately administered. De la Condamine states that age and a low temperature lessen the activity of the poison.

Brocklesby[2] experimented on a cat with the woorara by inoculating the animal with it. The cat expired in about half an hour. An hour afterwards the heart was pulsating, and it continued to beat for two hours after the animal's head was cut off. He found the poison to kill a small bird the moment two drops of it, in solution, were placed on the tongue. He also performed other experiments with it, which, however, do not possess any particular interest.

Herissant[3] instituted a great many experiments on animals with the woorara. Among others is one of, at first sight, considerable importance. He placed a tight ligature around the right posterior leg of a rabbit, and inoculated the animal with the poison of lamas and ticunas below the constriction. The rabbit died in less than ten minutes. In this case it is more than probable that a portion of the poison entered the circulation.

A bear wounded with an arrow dipped into a solution of the poison died in less than five minutes.

He also states that a small boy, to whom he had assigned the task of superintending the evaporation of an aqueous solution of the poison, became sick and faint, but recovered by exposure to fresh air and the administration of a pint of wine and a quantity of sugar. He was himself similarly affected, but recovered by like treatment.

From his experiments he concludes, among many other deductions, that the animals killed with the poison of lamas and ticunas are paralyzed in almost all the muscles before death, and that the muscles are pale and totally deprived of blood.

Fontana's[4] investigations were of a much more philosophical character than those we have referred to, and have formed the basis for most of the succeeding experiments on the subject. He showed conclusively that the vapor of the poison is not deleterious when respired, and thus dissipated one of the ridiculous ideas which had been circulated relative to its action.

[1] Relation abrégé d'un Voyage fait dans l'Intérieur de l'Amérique, Méridionale, etc. Mémoires de l'Académie des Sciences, tom. lxii., 1745, p. 391 et seq.

[2] Letter to the President of the Royal Society. Philosophical Transactions, vol. xliv. part ii., 1747, p. 408.

[3] Experiments made on a great Number of living Animals with the Poison of Lamas and Ticunas. Philosophical Transactions, vol. xlvii., 1751–52, p. 75.

[4] Mémoire sur le Poison Américaine, appellée Ticunas, etc. Sur les Poisons et sur le Corps Animal. Florence, 1781. Tom. ii. p. 83 et seq.

Fontana's experiments are so admirably conceived and carried out, that we think it advisable to lay the main facts of some of them before the Department.

With reference to the action of the ticunas when taken internally, Fontana was the first, we believe, to point out the fact that the state of the stomach at the time of the administration of the poison exercises a most important influence over the result. Thus he found that when the animal's stomach contained a considerable amount of food, death did not follow; but that when this viscus was empty, the animal succumbed, though at a later period than if the substance had been inserted into a wound. Moreover, a larger quantity was required.

He also determined the inefficacy of acids and alkalies as antidotes to the action of the ticunas.

With reference to its effect upon the blood, Fontana found that coagulation was absolutely prevented when a solution of the poison was mixed with it, but that the red corpuscles were not at all modified either in form or size.

He next investigated the action of the ticunas when applied to a nerve entirely isolated from the surrounding tissues. After many careful experiments, he arrived at the conclusion that under such a condition no poisoning is produced.

From additional observations he finally concludes that the ticunas destroys the irritability of the voluntary muscles, but does not affect that of the heart.

We next come to Brodie's[1] researches, which were instituted with woorara brought from Guiana by Bancroft. It was found that after apparent death the heart continued to pulsate for some time, and that its action might be still further prolonged by means of artificial respiration. It was also further ascertained that after division of the nerves supplying the inoculated limb, or ligature of the thoracic duct, the effects of the poison were still produced if the circulation of the blood was not impeded; and hence it was concluded that it is only through this latter channel that the substance in question is capable of exercising its influence. Finally, it was determined that woorara affects the brain by passing into the circulation and acting directly upon the cerebral substance.

In a continuation of the paper quoted, Brodie[2] details the results of further experiments relative to the effects of artificial respiration on animals apparently dead from poisoning with woorara. In one case the animal was perfectly restored to life through the means referred to, notwithstanding the function of the brain had been entirely suspended for a long time.

[1] Experiments and Observations on the different Modes in which Death is produced by certain Vegetable Poisons. Philosophical Transactions, part i., 1811, p. 178 et seq.

[2] Further Experiments and Observations on the Action of Poisons on the Animal System. Philosophical Transactions, part i., 1812, p. 205 et seq.

Waterton[1] also has shown that by means of artificial respiration life may be preserved in animals poisoned with woorara.

Passing over a number of other observations on this subject to which we might refer, we come next to experiments of a later date, performed under more enlightened physiological views, and consequently with more definiteness of purpose. We shall present the main results of these in due order.

Virchow and Münter[2] are the first to whom we have to refer under this head. Numerous experiments were performed by these observers, from which they deduce the following conclusions:—

1. That the woorara, even after having been kept dry for five years, is still intensely poisonous.
2. That the physiological action of the woorara is in harmony with the chemical analysis which denies the presence of strychnia.
3. That woorara therefore does not belong to the class of tetanic poisons, but, like opium, induces stupor; and although it causes slight convulsive actions in cats, there is, nevertheless, neither tetanus nor trismus.
4. That it induces paralysis of the voluntary muscles, with, at the same time, long-continued action of the involuntary muscles (heart, intestines).
5. That woorara does not appear to produce death by absorption from the external surface of the body, but only when it is absorbed through a solution in the continuity of the animal tissues.
6. That in poisoning by woorara, coagulation of the fibrin of the blood ensues in the same manner as though the animal is killed by mechanical means; and that death takes place not so much from any direct result of the poison, but indirectly by its causing the cessation of the respiratory process.

Next in order of publication are the experiments of Bernard and Pelouze.[3] After detailing to some extent the history and physical and chemical properties of the woorara, it is stated that animals poisoned with this substance die without tetanic spasm, there being only a few slight contractions of the muscles of the skin, face, and body.

On examining the bodies of animals poisoned in this manner, it was found that there was a total annihilation of all the properties of the nervous system; the reflex movements were found to be altogether lost; and in animals dead but for a minute, and still warm, the nerves were as inert as though life had been extinguished for a long time. The blood was found constantly black, coagulated with difficulty, and had entirely lost the property of becoming red on exposure to atmospheric air. It is asserted, from these facts, that the action of the woorara is very similar to that of the viper; and that the analogy is still stronger from the circumstance that, like the latter, it may be introduced into the stomach with impunity.

Experiments were then instituted with reference to this last point. In

[1] Experiments with the Woorali Poison; Lancet. Also, American Journal of Pharmacy, N. S., vol. v., 1840, p. 234.
[2] Reisen in Britisch Guiana. Von Richard Schomburgk. Band i. s. 456 (note).
[3] Comptes Rendus, tom. xxxi., 1850, p. 534 et seq.

the first place, it was found that when woorara was mixed with gastric juice, and the solution introduced into the circulation of animals, death uniformly followed. It is, hence, concluded that it is not from any alteration produced by the gastric juice that the poison is innocuous when introduced into the stomach. The other digestive fluids—the saliva, bile, and pancreatic juice—were likewise without effect upon the poisonous properties of the woorara. The inertness of the poison when ingested into the stomach was found to depend upon the fact that the gastric mucous membrane does not allow the toxic principle of the woorara to pass through it.

The following experiment is adduced as tending to establish this view:—

The fresh gastric mucous membrane of an animal (dog or rabbit), recently killed, was adapted to an endosmometer in such a manner that the mucous surface was on the outside. Into the instrument was then placed a solution of sugar in water, and the whole was plunged into an aqueous solution of woorara. At the end of three hours, although endosmosis had been effected, as shown by the elevation of the level of fluid in the tube, it was proven that the liquid contained therein possessed no poisonous quality; showing that the active principle of the woorara had not been transmitted. It was, however, determined that by allowing the arrangement to stand for a long time, the mucous surface became so altered as to permit the endosmosis of the poisonous agent.

It was also shown that the mucous membranes of the bladder, the nostrils, and the eyes were likewise impenetrable to the active principle of the woorara, and that only one mucous membrane of the body, that of the air-passages, was capable of absorbing this substance.

Vulpian,[1] in common with MM. Bernard and Pelouze, also found that the nerves very soon lost their irritability, and that the muscles remained excitable for a considerable period in animals poisoned with woorara. Contrary, however, to the results obtained by these last-named observers, he ascertained that the woorara, when introduced into the œsophagus or stomach of certain animals, as frogs, tritons, and toads, produced death. He also found that when thus administered the heart continued to beat for two or three days, whilst all the nervous functions were entirely abolished. Hence he concludes that the heart is independent of nervous influence.

The experiments of Brainard and Green, to which we have already alluded, will be further considered under another head, as will also the numerous and ably conducted investigations of Reynoso.

In a paper read before the Physiological Society of London, Cogswell,[2] among other conclusions, arrives at the following: That woorara is a poison when swallowed, that it acts primarily as a stimulant, and secondarily, or as it may be termed, specifically, as a sedative, paralyzing the functions of the nervous system both locally, when it is immediately applied to the body, and constitutionally after it enters the circulation.

We now come to Kölliker's[3] investigations, which for thoroughness and

[1] Comptes Rendus de la Societe de Biologie de Paris, t. i., 2d serié, 1854, p. 73.

[2] Lancet, March 3d, 1855.

[3] Physiologische Untersuchungen über die Wirkung einiger Gifte. Virchow's Archiv, Zehnter Band, 1856, s. 83 et seq. For conclusions see also Comptes Rendus, t. xliii. 1856, p. 791, and Proceedings Royal Society of London, 1857.

completeness have rarely been equalled. His conclusions are numerous, and appear to be deduced with his accustomed accuracy.

He found that the woorara acting through the blood destroyed the excitability of the motor nerves, the terminal branches losing their excitability in a few minutes, whilst their trunks did not become affected for an hour or two later. He is of the opinion that the sensory nerves are little if at all affected.

When introduced into the system through the mucous membrane of the intestinal canal, Kölliker found the woorara to act more slowly than through a wound, and that a larger dose was required. When applied to the skin of frogs, he found it altogether inoperative.

With reference to its effect upon the heart, it was determined that in amphibia this organ was but little influenced, as it continued to pulsate for many hours after poisoning was established. Owing to paralysis of the pneumogastric nerves, it was somewhat quickened in its action. He concludes, therefore, that the ganglia remain unaffected. The lymph hearts soon ceased to move.

When applied locally to nerves, woorara in concentrated solution was found to extinguish their excitability, but only after a considerable time. Applied directly to the brain and spinal cord, it was altogether without effect.

The conclusions in regard to the effect of woorara upon the sensory and motor nerves, though published before those of Bernard[1] on the same point, are similar to those which the latter had previously announced in his lectures.

In a second paper Vulpian details the results of further experiments with woorara. He confirms Kölliker's and Bernard's conclusions relative to its action on the nervous system.

He also investigated its effects upon the lymphatic hearts of frogs, and ascertained that under its influence they very soon ceased to beat.

Bernard's most complete researches relative to the action of the woorara are contained in the work to which we have already alluded. As this is so readily accessible to the members of the Department, we shall do no more than present the main results of his investigations. He found,

1st. That all reflex movements cease a few minutes after poisoning. The heart continuing to beat for a considerable time.

2d. That woorara is not absorbed from the mucous membrane of the stomach during digestion, bladder, or from the conjunctiva of mammals, but is readily taken up from the pulmonary and rectal mucous membranes of these animals. When introduced into the œsophagus or gizzard of birds, it is speedily fatal. Applied to the dry skin of frogs, it acts slowly but surely. In contact with the wet skin of these animals, it is not absorbed.

3d. Woorara abolishes the function of the motor nerves, but does not affect that of the sensory nerves. Muscular irritability is rather augmented than diminished.

4th. That woorara kills the nerves from the periphery to the centre, acting in this respect conversely to strychnia.

[1] Leçons sur les Effets des Substances Toxiques et Médicamenteuses.

5th. That it causes death by arresting the process of respiration, thus inducing asphyxia.

The experiments of Prof. E. Pelikan,[1] of St. Petersburg, tend to conclusions similar to those we have last quoted. This observer, however, found that the nervous irritability did not always disappear immediately after death, as stated by Bernard. Prof. Pelikan also found that when introduced into the intestinal canal, woorara exercised its ordinary effect, though more slowly than when acting directly through the circulation. Curarin obtained by the process of Roulin and Boussingault produced the same physiological effect as the woorara.

Having thus brought the history, the chemistry, and the physiology of woorara to the present time, we come, in the next place, to speak of our own researches. These have been conducted with all the care which such observations require. Though we have worked to a certain extent independently, every experiment instituted by one has been verified by the other, so that we are mutually responsible for the statements contained in this memoir. Moreover, observations and suggestions have been freely exchanged.

Original Researches.—The varieties of woorara which we propose to consider were brought, in February, 1857, from the Rio Darien, in the province of New Grenada, South America, by Drs. Ruschenberger and Caldwell, of the United States Navy. By them they were presented to Prof. Joseph Carson, of the University of Pennsylvania, who very generously placed all in his possession at our disposal.

The woorara thus obtained is of two kinds, one marked "*Woorara, variety Corroval,*" is asserted to be the strongest arrow-poison; the other, labelled "*Woorara, variety Vao,*" is not considered so powerful. So far as we are aware, these species of South American arrow-poisons have never yet been noticed by those who have written and experimented upon the subject.

Our friend, Mr. Trautwine, late chief engineer of the Panama Railway, informs us that the arrow-poison employed by the Indians of the Rio Atrato, on the eastern side of New Granada, is not at all powerful. He states that he has frequently wounded birds, pigs and other animals with it without producing any marked result. The Indians, however, told him that they used a more virulent poison when they went to war, but if this be true, he was unable to obtain any of it. He has never heard them call any of their poisons by the name of corroval or vao.[2] In regard to the manner of manufacturing the varieties we refer to we have been unable to obtain as yet any information.

[1] Physiologische und Toxicologische Untersuchungen über Curare. Virchow's Archiv, Elfter Band, 1857, s. 401. See also Comptes Rendus, t. xliv., 1857, p. 507.

[2] Also Rough Notes, &c. By John C. Trautwine, C. E. Philad., 1854, p. 65.

CORROVAL. *Physical and Chemical Characters.*—The corroval when in large lumps is of a brownish black colour. Reduced to fine powder, it becomes a tawny yellow. The larger pieces have very much the appearance presented by vegetable extracts of the same colour. Its taste is intensely bitter and very persistent. The saturated aqueous infusion is of a very dark-brown almost black colour, and of neutral or exceedingly slight acid reaction. The alcoholic tincture is of a pale yellow tint. Both water and alcohol extract the active principle. The insoluble residue, viewed by the microscope, is seen to consist of vegetable cells, starch granules, and other vegetable structures, oil globules, &c. Small grains of silica are also to be observed. No parts of animals of any kind can be discovered (Fig. 1). It is very certain that these latter do not enter into the composition of corroval.

Fig. 1.

In the aqueous solution large colonies of infusoria are found, probably all of a vegetable character.

The aqueous solution mixed with blood does not retard its coagulation or alter the shape of the blood disks more than would any bland fluid of similar density. It is not at all poisonous to plants. We have inoculated tender flowers with it repeatedly without producing any effect upon them.

In order to separate the active principle from the corroval, the following processes were adopted:—

1st. Ten grains of the substance were extracted by repeated portions of boiling water, till a bitter taste was no longer afforded. The solutions were now mixed and boiled with magnesia. The whole was thrown upon a filter and the residue well washed with boiling alcohol. It was perfectly insoluble, showing, therefore, the absence of strychnia.

The filtrate was filtered repeatedly through animal charcoal, till all the bitter principle and colouring matter were absorbed. The charcoal was then treated with boiling alcohol in fresh portions till all bitterness was entirely extracted. The alcohol was then evaporated to dryness. By this process a greenish white substance, insoluble in water, was obtained. It was readily dissolved by alcohol, ether, or chloroform. It is not crystallizable. It forms salts with hydrochloric, nitric, and sulphuric acids, neither of which crystallize.

2d. The process employed in this instance was that used by Roulin and Boussingault, but modified by employing water to extract with instead of alcohol.

Ten grains of the corroval were reduced to fine powder and extracted with water, as in the first process. To the solution tannic acid was added, a voluminous flaky precipitate of a yellowish white colour was thrown down. This was well washed in a filter, to remove the tannic acid, mixed with water and heated to boiling, a few crystals of oxalic acid being added, till it was entirely dissolved. The acid liquor was next treated with magnesia in excess, and filtered. The filtrate was evaporated to dryness, and the extract thus obtained dissolved in hot alcohol. This solution evaporated to dryness furnished a substance similar to that obtained by the first process, but more highly coloured.

For the substance procured by the foregoing processes, possessing as it does all the qualities of an alkaloid, and in an eminent degree all the toxic properties of the corroval, we propose the name of *corrovalia*. We regret that we are unable, owing to the smallness of the quantity, to enter at present more fully into the chemistry of this interesting substance. From repeated observations we have, however, ascertained that it produces effects upon the animal organism precisely identical with those caused by the corroval itself, requiring, however, an infinitesimally smaller dose.

Physiological Investigations.—The action of corroval upon the animal organism is so entirely different from that of the ordinary woorara, as to indicate very strikingly its dissimilar composition. At the same time, the more obvious effects do not present any considerable variation. This is well shown from the following experiments:—

Experiment. A pigeon was inoculated near the cloaca with a little strong infusion of corroval. The bird at first exhibited no uneasiness. After the lapse of two minutes it walked a few steps, and began to show signs of discomfort. At the end of four and a half minutes it suddenly fell, flapped its wings once or twice, and died without further struggle.

Expt. A large owl was inoculated with a small fragment of corroval in the leg. Owing to the density of the tissues of the part, or to some other cause, the poison was not absorbed after twenty-five minutes had elapsed. It was therefore again introduced, in solution, under the left wing. After three minutes continuous movements of the muscles of the throat were induced. The bird staggered, let its wings fall, and appeared to stand with difficulty. About the end of the sixth minute it fell, and died without the least convulsive movement. The pupils were enormously dilated.

Expt. A mouse was pricked with a knife charged with a solution of corroval. It fell dead in three and a half minutes, without the slightest spasm.

Expt. Under the skin of a large frog a few drops of a strong solution of corroval were introduced. The animal remained, apparently, unaffected for twenty-five minutes; at the end of this period paralysis of the voluntary muscles commenced. When quietly laid upon the back, and the extremities stretched out, no effort was made to assume another position; when irritated, however, the extremities were withdrawn. The frog was entirely dead in forty-eight minutes—*i. e.* exhibited no motion of any kind to ordinary stimulus.

These experiments are sufficient to show the general effect and virulence of the corroval. It is perceived that, so far as these points are concerned, its action is very similar to that of the strongest woorara. There is no

tetanic spasm, a fact which sufficiently proves the absence of strychnia. As we shall presently show, however, when the action of the corroval is more physiologically considered, many important points of difference between it and the ordinary woorara will be found to exist.

Action on the Heart.—The woorara hitherto used by experimenters was found, as we have already seen, to exercise little or no direct influence on the heart. This organ continued to beat in all animals for a considerable period, and, even after it had entirely stopped, it could be made to resume its actions by artificial respiration. The action of the corroval is in this respect directly antagonistic, as will be perceived from the following experiments:—

Expt. A small frog was poisoned with corroval by inserting a minute piece of the substance under the skin of the back. The chest was then opened, so as to show more distinctly the action of the heart. During the third minute after the insertion of the corroval the heart beat forty-five times, and very irregularly. For the fourth minute the pulsations were but thirty. During the fifth minute the ventricle acted in a very singular manner, small portions of its tissue being apparently paralyzed, and bulging out, whilst the rest was contracted. The pulsations were but eighteen. In five and a half minutes from the inoculation the ventricle had entirely ceased beating, and had contracted to a very small bulk. It was hard and rigid, and of a pale-red colour, showing the entire absence of blood both from its tissue and cavity. The auricles continued to act for two minutes longer, when they also ceased. Instead of being contracted, the auricles were rather dilated. Galvanism was applied to the heart, without having the slightest effect in exciting it to action. The lungs or air-sacs were perfectly collapsed.

During the whole of this period the voluntary muscles were active. The frog struggled violently to escape, and finally succeeded in leaping to the floor. It remained active for twenty minutes. The pupils, which, at the time the heart ceased to act, were contracted, now became dilated, and all voluntary movements were abolished.

Expt. A pigeon was inoculated with a little strong aqueous solution of corroval. It fell dead in five and a half minutes, without convulsive action. The pupils were enormously dilated. The chest was immediately opened, and the heart was found to have ceased pulsating. Under the influence of a powerful galvanic current a few fibres contracted two or three times. It was incapable of further excitation. The ventricles were somewhat corrugated, and the auricles dilated. The peristaltic action of the intestines was readily excited by galvanism for about half an hour.

Expt. A rabbit was inoculated in the leg with a little strong infusion of corroval. In three minutes the animal exhibited great uneasiness, and constantly moved the jaws, as if chewing something. In six and a half minutes it fell dead, without the least spasm of any kind. The pupils were largely dilated. The chest was immediately opened, and the heart was found to have ceased pulsating. The ventricles were small and empty; the auricle contained a quantity of dark fluid blood. A single ventricular contraction was induced by galvanism.

Expt. The crural nerves of a very large frog were isolated, and a ligature placed under them and tied tightly so as to include all the tissues but the nerves. A large quantity of the aqueous solution of corroval was then injected under the skin of both legs. The chest was then opened, so as to show the movements of the heart. These did not seem to be disturbed, except by the impediment caused to the circulation by the ligature. After ten minutes the pulsations were forty-five per minute. At the end of half an hour the heart was still active, beating forty-eight times per minute. The ligature was now removed. The heart almost immediately began to exhibit the ordinary signs of the action of the corroval—viz., the partial paralysis and irregular contractions which it occasions—and in

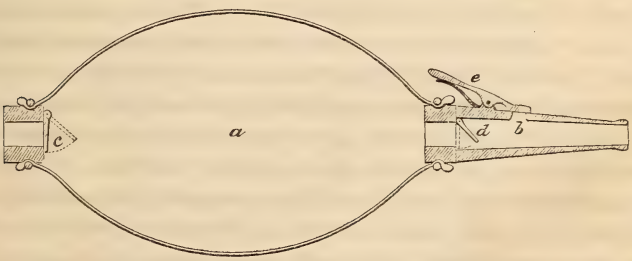
six and a half minutes the ventricle had entirely ceased to act. The auricles pulsated for two and a half minutes longer. No contractions could be induced by galvanism. Dilatation of the pupils ensued in twenty-five minutes, and all voluntary movements ceased.

From the foregoing experiments relative to the action of corroval upon the heart, which have been frequently repeated, with uniform results, we arrive at the conclusion that it acts directly upon this organ by being carried to it through the circulation. It is well known that in cold-blooded animals the respiration may entirely cease, and the heart nevertheless continue its action for a considerable period afterwards. These results, indeed, follow the poisoning of such animals by the ordinary woorara; and, as Brodie, Waterton, and numerous other experimenters, have shown, if the respiration be continued artificially in warm-blooded animals poisoned with this substance, life may be preserved; and even after the heart has ceased to act, it will again resume its movements under this influence. The discontinuance of the function of the heart through the action of the corroval must therefore be regarded as a primary effect, in no degree dependent upon the respiratory process, but due, as we have already stated, to the direct influence of the poison upon the heart itself. In order, however, to place the matter beyond doubt, the following experiment was instituted:—

Expt. The trachea of a cat was opened, and a tube introduced, to serve for the attachment of an apparatus for conducting artificial respiration.[1] A quantity of strong infusion of corroval was then injected under the skin of the flank, and the chest immediately opened. Artificial respiration was then instituted. The heart was actively pulsating. In a few moments its operation became irregular, and at length ceased entirely, seven and a half minutes after the introduction of the poison. The pupils, which at first were contracted, gradually enlarged to their fullest extent.

[1] The apparatus we have devised for the purpose stated, and of which a figure is annexed, has been found to answer very admirably, and can be much more easily

Fig. 2.



managed than the ordinary bellows. An India-rubber bag (*a*) has openings in both ends, into which two brass tubes are fixed, provided with valves (*c*, *d*). The tube *b* is attached to a tube of India-rubber, which, by a nozzle and stopcock, is inserted into the trachea. When the bag is squeezed, the valve *c* is closed, and the valve *d* opening, the air passes into the lungs. On removing the pressure, and raising the valve *e*, the air escapes from the lungs through it, the valve *c* opens, the valve *d* closes, and the bag again becomes filled.

The instrument was made for us by Messrs. J. W. Queen & Co., 924 Chestnut St.

The independence of the heart in relation to the respiratory process is thus fully shown, and one of the main points of difference between the action of the corroval and that of the woorara indicated. It is perhaps useless to bring forward further illustrations in support of the facts we have stated; but the following experiment is so apposite and conclusive, that we cannot refrain from adducing it:—

Expt. A young alligator, about a foot in length, was properly arranged, and the chest opened. The heart was beating thirty-six times per minute. A little solution of corroval was next introduced under the skin. The pulsations of the heart, five minutes afterwards, were thirty-four per minute. The respiratory actions were vigorous, and perfectly effectual. After twelve minutes the action of the heart commenced to be irregular, and the pulsations had fallen in number to twenty-eight per minute. The rhythm of the auricles with the ventricle was entirely reversed, and the former was very curiously corrugated. The heart ceased acting (both auricles and ventricle) seventeen minutes after the inoculation. The left auricle was of a pale-red colour, the right was black, the ventricle was pale and contracted. The heart stopped immediately after vigorous and long-continued respiratory movements. The lungs were well filled with air, and respiration was actively continued for sixteen minutes after the heart had ceased to pulsate. The pupils, which for a few minutes before the heart became affected were contracted to mere lines, were now dilated to a great extent, and all voluntary movements ceased.

From the foregoing experiments, we do not see how any other conclusion than the one we have stated can be adopted—viz., that the discontinuance of the heart's action is a primary result, and not due to the disturbance of any other function. Whether we regard the cause of its motion as being due to muscular irritability or to the ganglia found throughout its tissue, we cannot avoid the inference that both are powerfully influenced through the action of the corroval. In the experiment last stated we have seen that the rhythm of the heart was greatly disturbed, and that it continued to pulsate in the most irregular manner. We might adduce numerous other observations to the same effect. All this brings us to the conclusion that the ganglia are primarily affected, especially as from the contraction of the pupils and the cessation of the capillary circulation, to which we shall presently allude, we are led to infer the paralysis of the sympathetic nerves. No doubt, however, can exist that the muscular irritability of the heart is also completely destroyed, for no irritation, not even that of the strongest galvanic current, can re-excite its pulsations a minute after they have ceased; and even before the lapse of this short period we can obtain but one or two feeble manifestations of the force which once caused its throbbings.

We have as yet said nothing relative to the action of the corroval upon the *lymph hearts* of frogs. Without stating the experiments in full, we may say that, from frequent observations, we have convinced ourselves that under the influence of this agent they cease to pulsate in from twenty to thirty minutes after its introduction into the circulation.

We may here refer to the influence of the corroval over the *capillary circulation*. We have uniformly found it to be arrested one or two minutes before the ventricle stopped acting. We consider this to be due to paralysis of the sympathetic nerves.

Whilst viewing the web of a frog's foot, in order especially to satisfy ourselves relative to the above point, we have never seen any alteration in the size, colour, form, or number of the red or white corpuscles. We have already, however, stated our views upon this subject.

The action of the corroval upon the *nervous system*, though in one or two respects similar to that of the ordinary woorara, is, we think, in others materially different. The latter destroys all voluntary and reflex movements immediately; it acts exclusively on the motor nerves, leaving the sensitive nerves unaffected, as Bernard has satisfactorily shown. As we have demonstrated, the first action of the corroval is directly upon the heart, and hence we have one important point of difference in the effects of the two poisons. In considering the action of this substance upon the nervous system, we shall indicate other points of dissimilarity.

1. *Influence of Corroval upon the Voluntary and Reflex Movements.*—*Expt.* A large frog was inoculated with corroval under the skin of the back. The heart ceased pulsating in seven and a half minutes. The frog continued active for twenty minutes after the insertion of the poison, and at the end of twenty-five minutes all voluntary movements had ceased, paralysis first occurring in the anterior extremities. If now an extremity was irritated, it was immediately withdrawn, and galvanism applied to one foot excited movements in all the others. This condition remained for forty-five minutes after the introduction of the corroval, when it was changed, and reflex movements could only be excited in the nictitating membrane. In one hour and five minutes all reflex movements were lost.

Expt. A young alligator was inoculated with corroval under the skin of the flank. The heart ceased acting in seventeen minutes, and in thirty-five minutes all voluntary movements were abolished, the anterior extremities first losing the power of motion. Upon pinching the tail, violent reflex motions were excited in all parts of the body, including the lungs, and strong respiratory movements were produced. They were readily excited for more than an hour and a half after the stoppage of the heart.

Numerous other experiments could be adduced to the effect above indicated—viz., that in cold-blooded animals the voluntary and reflex movements remain for a considerable period after the cessation of the heart's action, and consequently much longer than after poisoning with the ordinary woorara. At first sight it appeared to us that the abolition of these manifestations of the integrity of the brain and spinal cord, which eventually occurred, was due to the direct action of the corroval; but after the institution of other experiments, and a fuller consideration of the subject, we have arrived at a very different conclusion. In order to ascertain the effect upon the brain and spinal cord of the cessation of the heart's action, or, what amounts to the same thing, the prevention of the passage of the blood to or from them, we performed the following experiment:—

Expt. The chest of a large frog was opened, and a ligature placed around the vessels at the base of the heart. All voluntary movements ceased in twenty-five minutes; and at the end of fifty-five minutes no reflex actions could be excited in any part of the body. The sciatic nerve of the left posterior extremity was exposed, and, on being irritated, strong contractions were produced in the muscles of the leg. This condition was present at the end of two and a half hours.

The experiment was frequently repeated, with uniform results. The voluntary movements always ceased in from twenty-five to thirty-five minutes, and the reflex in from fifty minutes to an hour and a quarter, after the ligation of the vessels. We consequently feel warranted in concluding that the cessation of these actions in animals poisoned with corroval is an indirect effect resulting from the cessation of the function of the heart, and therefore not due to any specific effect upon the brain or spinal cord.

2. *Action upon the Nerves and Muscles.*—The woorara, as experimented with by Bernard, Kölliker, and others, was found to immediately destroy the excitability of the nerves, leaving that of the muscles unaffected, or perhaps augmented. We have not found this to be the case with the corroval, as the following experiments will show:—

Expt. A large frog was inoculated with a little strong solution of corroval. The movements of the heart were arrested in seven minutes. Voluntary motion ceased in about twenty-five minutes, and the reflex in about an hour, after the introduction of the poison. The sciatic nerves of both posterior extremities were now exposed. Upon gently pinching either of them, strong contractions were produced in the muscles of the corresponding leg. They remained excitable to galvanism for an hour longer. The muscles were irritable fifteen minutes after excitability was lost in the nerves.

Expt. A cat was inoculated with corroval. Death followed in about five minutes. The sciatic nerve of the right leg was exposed, and, on irritating it, strong contractions were produced in the muscles of the extremity. The nerve continued irritable to galvanism for twenty-six minutes after death, the muscles for thirty-five minutes.

Expt. A pigeon was killed with corroval, death ensuing four minutes after the introduction of the poison. The sciatic nerve was irritable for seventeen minutes subsequently. The muscles retained their irritability for twenty-two minutes.

From these experiments we see that nervous excitability remains for a longer period than in cases of poisoning with woorara. This function is nevertheless affected by the corroval, for, as we have seen, it remains much longer present in animals whose circulation has been arrested by ligature of the large vessels. Consequently the mere deprivation of oxygenated blood, or the retention of that which is not decarbonized, cannot be the cause of its abolition, and we must therefore ascribe it to the direct action of the poison.

We also perceive that the muscular irritability was lost very soon after that of the nerves, and consequently we have here another point of difference with the woorara. It may perhaps be thought, by those who disbelieve in direct muscular irritability, that the reason why the muscles appeared irritable after the loss of excitability in the nerves was due to another cause—viz., the retention of this faculty in the minute ramifications of the nerves after its loss in the larger trunks. In relation to this point, we think we can show that the corroval, like the ordinary woorara, causes the death of the nerves from the periphery to the centre, and, consequently, that the minute ramifications lose their vitality before the larger trunks. In illustration we subjoin the following experiment:—

Expt. A few drops of the strong infusion of corroval were introduced under the skin of the back of a large frog, the sciatic nerve of the left side having been

previously cut. The heart ceased to act in eight minutes—voluntary and reflex movements ceased respectively in thirty and fifty-five minutes. The sciatic nerve of both sides were excitable, the left in a less degree than the right. After the lapse of an hour and a half, the left nerve had entirely lost its irritability, whilst the right was still excitable, and remained so for twenty minutes longer.

With strychnia, however, the effect is far different, this substance destroying the nervous excitability from the centre to the periphery, as the following experiment shows.

Expt. Under the skin of a large frog, whose left sciatic nerve was previously divided, a few drops of a strong solution of strychnia were introduced. Tetanic spasms ensued in two minutes. After forty-five minutes the nerves were irritated by galvanism. That of the left side, which had been cut, responded energetically, whilst no motions could be produced through the uncut nerve. The former remained excitable for two hours later. Muscular irritability was strong in both legs. The experiment was not further pursued.

We infer from the foregoing experiments that the irritability of the muscles is a faculty entirely distinct from the irritability of the nerves, and that accordingly it may be present after the entire abolition of the latter. The fact that the corroval destroys the excitability of the nerves from the periphery to the centre, acting first upon the small branches, and subsequently upon the larger trunks, is, we think, abundantly shown. Hence the contractility exhibited by the muscles on being galvanically irritated could not be due to excitability remaining in the minute nervous radicles.

With reference to the effect of woorara upon the sensory and motor nerves, it was found by Bernard and Kölliker that the latter first lost their vitality, the former not being directly affected. By confining the action of the poison to certain portions of the body, Bernard obtained movements in a non-infected limb by irritating one that was fully poisoned. Hence he proves that the woorara does not affect the integrity of the sensory nerves. We have performed his experiments frequently, substituting corroval for woorara, without obtaining his result. They are as follows :—

Expt. The vessels of the left posterior extremity of a medium sized frog were ligated, and all the tissues, with the exception of the sciatic nerve, divided. The limb was consequently only connected with the body through the medium of the nerve. The animal was then inoculated with corroval high up in the back. The movements of the heart were arrested in six minutes—voluntary and reflex movements ceased about the usual time. On irritating either of the anterior extremities, or the posterior leg which was not cut, no motions were excited in the left posterior extremity, showing, therefore, that sensation was entirely destroyed by the corroval. The irritability of the muscles subjected to the influence of poison was lost in one hour and fifty minutes after the inoculation, whilst it was present in the non-poisoned limb sixteen hours afterwards. The animal was not further observed.

Expt. The sacrum of a large frog was carefully removed, and the crural nerves isolated by passing a ligature around the body so as to include all the tissues but the nerves in question. This was tightly drawn and tied so as effectually to prevent the circulation of the blood in the posterior extremities. The frog was now inoculated with a solution of corroval in the manner last stated. The heart ceased to act in six and three-quarter minutes—voluntary movements were abolished in thirty minutes, and all reflex actions were lost in fifty-three minutes after the introduction of the poison. Strong galvanic irritation was now

applied to the anterior extremities, and although muscular contractions were induced in them, there were no reflex movements in the posterior extremities. The sensory nerves had therefore lost their faculty of conveying impressions. Muscular irritability was extinct in all the anterior portions of the body at the end of two and a quarter hours. The muscles of the posterior extremities retained their irritability for twenty-two hours. The experiment was not further continued.

From these experiments it is perceived that the corroval, unlike the woorara, destroys sensation, and that so far from augmenting the irritability of the muscles, this faculty is also annihilated.

Bernard found that in animals poisoned with woorara, the muscles were red as if they contained a considerable quantity of blood. In all cases of corrovalic intoxication the reverse is the fact, provided, of course, that the circulation has not been mechanically impeded by ligatures, &c.

Absorption of Corroval.—Corroval is readily absorbed from the mucous membrane of the stomach, and from the external surface of the skin of frogs. The following experiments are cited in illustration of this point:—

Expt. Ten drops of the strong solution of corroval were placed in the stomach of a large frog. The chest was then opened. The heart was pulsating 50 times per minute; in a minute or two afterwards, the contractions of the ventricle became very irregular, the partial paralysis was present, and it ceased to act in five minutes after the introduction of the poison. The auricle stopped two and a half minutes subsequently. Slight convulsions of a clonic character now appeared in the posterior extremities, and lasted for a few minutes. The ordinary symptoms of corrovalic intoxication then ensued in regular order.

We mention it as a singular circumstance, that in all cases in which we have given the corroval internally, there were convulsive movements of the posterior extremities as above, whilst we have never seen them in frogs where it was introduced directly into the circulation.

Expt. Ten drops of the strong solution of corroval (twenty grains to the ounce) were placed upon the back of a large frog. After the lapse of fifteen minutes the chest was opened. The heart was still pulsating actively. After ten additional minutes five more drops were placed upon the back—in a short time it began to act, and thirty-five minutes after the first introduction of the poison the heart ceased. The other consequences followed in due succession.

We deem it unnecessary to enter more fully at this time into the discussion of the questions connected with the absorption of the poison, or to bring forward other experiments. They will be considered more at length under another division of our subject.

From the foregoing experiments and observations in relation to the corroval, we deduce in the main the following conclusions:—

1st. That it differs essentially from any variety of woorara hitherto described, both in its chemical constitution and physiological effects.

2d. That it acts primarily upon the heart, through the medium of the blood, producing an arrest of the action of this organ.

3d. That the annihilation of voluntary and reflex movements is a secondary result of its action, depending primarily upon the discontinuance of the function of the heart.

4th. That it acts upon the nerves from the periphery to the centre, and abolishes both the sensory and motor functions.

5th. That it destroys muscular irritability.

6th. That it paralyzes the sympathetic nerve, this being one of its primary effects.

7th. That it is absorbed both from the intestinal canal and skin of frogs.

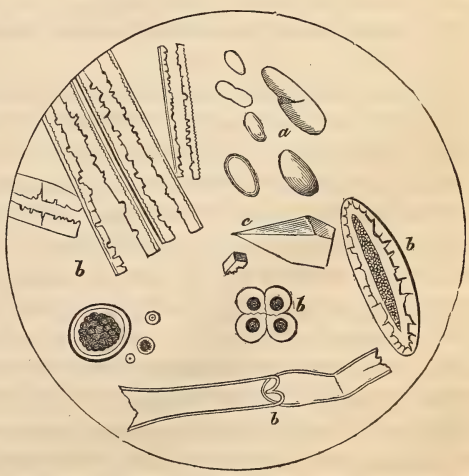
8th. That its poisonous qualities are due to an alkaloid hitherto undescribed.

VAO OR BAO.—The variety of arrow-poison of which this portion of our paper treats is, without doubt, a different material from the ordinary woorara used in Europe. At first we were disposed to regard the vao as a weak specimen of the same material which M. Bernard, Kölliker, and others have studied; but a long and patient investigation of its properties and physiological reactions has forced us to the conclusion that vao poison, although it presents some points of resemblance to the arrow-poison of Waterton, De la Condamine, and the later observers, is essentially a distinct and different substance. Indeed it is by no means unlikely that the various tribes of South America employ different but allied agents to furnish the arrow-poison whose use seems to be so general in that part of the world, and we are surprised that no specimens of the varieties before us have as yet found their way into the hands of European physiologists.

We shall now proceed to consider in order the physical, chemical, and physiological characteristics of vao.

Physical and Chemical Characters.—The vao in our possession is a dark-brown extract, perfectly dry and hard, and unaffected by exposure to the air. It is partially soluble in water and alcohol. The insoluble portion consists of a white or light gray deposit, of a shred-like and flocculent appearance. Examined under the microscope, this is found to be principally amorphous matter with a considerable admixture of starch-cells (Fig. 3, *a*), and various forms of entire or broken cells, all of vegetable origin (*b*). A few broken crystals are also found (*c*), but no indications whatever of the

Fig. 3.



presence of any relics of animal tissues, such as we should naturally look for were snake-heads and ants employed to make up this deadly material. The solutions of vao are of a tawny yellow hue, and are feebly acid.

In the chemical examination of vao, the same processes were employed as were resorted to in analyzing corroval, and an alkaloid was obtained, which differed in no essential physical or chemical character from that of corroval. When, however, equal quantities of corroval and vao were analyzed, the latter material yielded the smaller amount of alkaloid. The result of the physiological comparison of the two substances extracted from the poisons in question will be found elsewhere.

Before proceeding to study the effect of vao upon the tissues and organs, it will be well to present a general view of the symptoms and appearances offered to the eye by an animal poisoned with it, reserving their interpretation for after consideration.

Expt.—A morsel of vao was introduced under the skin of the belly of a large frog. No remarkable symptoms were noticed during the first twenty-seven minutes. The frog leapt about as usual, making violent efforts to escape from the receiver. At the close of this time his fore legs were weak. Twenty minutes later the hind legs were also weak, and although he remained in any unusual posture in which he might be placed, he still retained the power to move, apparently at will, and when irritated. Fifteen minutes later all volitional control had departed in the extremities, although he retained the power to lift his head, and exhibited reflex motions of one leg when the other was irritated. At the close of the next hour the reflex acts ceased, the eyelids being the last muscular part which responded by reflex acts to external applications. Three hours and fifty-seven minutes elapsed between the inoculation of the vao and the loss of motor power in the lids. It is also to be observed that the frog continued to use the respiratory muscles of the lower jaw, and more rarely of the flanks, some time after he had lost all voluntary control of the extremities.

The order of externally visible phenomena is therefore as follows :—

1. Loss of power in the fore legs.
2. Loss of power in the hind legs.
3. Loss of reflex manifestations in the extremities.
4. Respiratory efforts cease.
5. The eyelids are no longer irritable, and do not close when touched.

In a few cases the frogs also exhibited convulsive motions, the hind legs being extended with considerable force, but not remaining rigid in this posture, as occurs when strychnia has been used.

When a warm-blooded animal, as a rabbit, is the subject of the action of vao, no marked symptom is observable until the head begins to droop and the animal crouches on his belly at the close of about twenty minutes. Before this occurs there is sometimes noticed a chewing movement of the jaws and some gritting of the teeth, a symptom which is often marked in rabbits poisoned with tincture of veratrum viride. At the close of fifteen or twenty minutes, as we have said, the head begins to sink, is jerked up, falls lower, is again jerked up, and at last is no longer lifted. Meanwhile the animal falls over on his side. The respiration becomes weaker and

less frequent. The heart beats more slowly. Slight convulsive motions of the ears and hind legs occur. The pupil, previously contracted, dilates, and in some cases the muscles of the skin are affected with a general movement. At last the respiration ceases, and the lids are no longer irritable. Meanwhile the heart is still acting feebly, and the temperature has fallen. After death the pupil contracts, and post-mortem rigour succeeds at an interval of from one to five hours.

The time required to destroy a rabbit is usually about half an hour or forty minutes, when the poison is introduced under the skin. Pigeons similarly treated die within fifteen minutes.

It will be seen from these statements that vao poison acts less rapidly than corroval, or the ordinary woorara of European observers. And this was even more manifest in the case of a cat whose symptoms differed very remarkably from those already described.

Expt. A large black cat received in the thigh a lancet-point charged with dried vao. After two minutes it was withdrawn, and found to have lost most of its poison. During thirteen minutes the animal showed no marked signs of the action of the vao, except a tendency to rest couched on her breast, and some indisposition to move about. Two minutes later she rose to her feet and made the same motions of swallowing and chewing which we have noticed in the rabbit. These proved to be the first symptoms of a violent vomiting which followed almost immediately. This action accomplished, the cat again rested on her belly, her head drooping as before, until after eleven minutes had passed, the chewing movements began again, and another violent attack of vomiting brought her to her feet. On this occasion only a little mucus was rejected. The head again sunk as she lay down, the respiration became short and quick, and the heart beat more slowly. Forty minutes after the vao was used she could still raise her head, and the eyes followed the motions of a candle passed to and fro in front of them. In the next five minutes the head fell on one side, and the body rolled over a minute later, the pupils dilating to their utmost extent. Fifty-five minutes after the vao was given the cat died in the most frightful general convulsions, with foaming at the mouth, vomiting, and ejection of urine and feces.

The difference between the external symptoms in this animal and the rabbit is as great as the effect produced on one and the same species of animal by two dissimilar poisons.

M. Bernard has never seen vomiting caused by woorara, but we cannot find that he has experimented with cats.[1] Virchow had already noted the fact that the cat is subject to convulsions when poisoned with woorara, and in this respect the vao poison resembles it. Cats are, however, so liable to convulsions that almost all poisons produce them, and very trivial causes will bring them on in kittens apparently in health. Thus we have seen a cat frightened into wild epileptiform convulsions.

Absorption.—In this connection it is still to be held in mind that the

[1] The chewing movement which we have described as preceding the act of emesis in the cat, was also noted in nearly all of the warm-blooded animals poisoned with either corroval or vao. In one of them, a pigeon, vomiting took place. It is possible that the peculiar movements alluded to may be indicative of the existence of nausea which does not reach the actual climax of vomiting.

variety of woorara poison which we have now in view is far less active than the woorara examined by Bernard and Kölliker, and even less so than the corroval of which a portion of our paper treats.

The phenomena which announce the absorption of the vao are therefore slower in appearing, and have sometimes to be awaited a considerable time. The actual length of time required for absorption to occur is, however, of less moment than the facts relative to the absorbing power of the various tissues with which the poison may be placed in contact, and the exterior circumstances which seem to be influential in determining the rate of absorption.

Most of our experiments have been made upon frogs. We shall detail the results with reference to the various tissues.

Areolar Tissues.—When a morsel of vao was placed under the skin of a frog death inevitably ensued, whether the animal was left in dry or moist air, or in water, and no important difference was observable in these several cases, save that when a solution was employed the death was more rapid than when the solid poison was used. Thus, a frog of middle size received under the skin of his back a morsel of vao. In four hours all motion, voluntary and reflex, had departed. A second frog, of rather larger size, having received in his subcuticular sac the same amount of vao dissolved in water, perished in forty minutes.

The same general rule applies to those warm-blooded animals upon whom the poison was tried. An equal amount of vao being placed under the skin in two rabbits of about the same size, the one which received the vao in solution perished in eighteen minutes, while the other lived for half an hour.

Absorption by the Skin.—Vao, like woorara, is best absorbed by the skin of the frog, when the skin is comparatively dry, a fact which is due to M. Bernard, and which he conceives to be owing to the constant exhalation of a viscous and protective mucus, which is abundant when the frog is in, or just removed from the water, and which is scarcely observable when the frog has been long out of that element. The following experiments sufficiently illustrate these facts with reference to vao.

Expt.—A large frog which had been kept under a receiver open at top during several days, was found to have a skin much less lubricated than that of a frog kept in water. The skin at the middle of the back was cleaned with a piece of cotton wadding, and a small portion of a paste composed of vao was put upon the spot thus deprived of its mucus. The frog being replaced in the receiver, at the end of seven and a half hours all motion was lost.

Expt.—A frog of smaller size was so imprisoned in a net of wire that he remained with about half of his body under water. Upon his back was put a smaller amount of vao paste than was used for the last frog, but the situation chosen was the same, no attempt being made to rub off the mucus. Although the vao was twice renewed within forty-eight hours, no accident resulted to the animal, nor was he to appearance in any way affected by it.

That, however, the amount of absorbing surface exposed to the action of the poison may modify the result very materially, was seen in the following experiments :—

Expt. A small but very active frog, which had just been removed from the water, had one leg imprisoned in a piece of thin caoutchouc tubing, which was

well filled with cotton saturated with an aqueous solution of vao—one grain to the ounce of distilled water—a morsel of the solid poison was also thrown into the tube, and the open end closed with slight pressure around the leg, above the knee. At the end of four hours and forty-five minutes, reflex motions were no longer to be excited by galvanism.

Expt. The last described experiment was repeated with the single variation of placing the frog half under water, taking care to keep out of the water the leg which was in the tube and surrounded by poison. At the close of five hours no effect was visible. At the end of twenty-five hours the frog was sluggish—three and a half hours later all movement, reflex and voluntary, was over.

These two experiments, with others of a like character, seem to show that when a large amount of surface is exposed to vao in solution, and but half of the remainder of the body placed in water, absorption may occur; the same result being attained in a far shorter period when one leg being kept moist with vao, the rest of the body is exposed to the desiccating influence of the atmosphere.

Now that the production of mucus does protect the frog to some extent cannot be doubted, and has been proved by M. Bernard with his usual experimental skill. It will be seen, however, from the next set of experiments, that the amount of moisture in the system of the frog has much to do with his power to absorb the vao in solution, so that it is not only the exudation of mucus, but also the excess of watery supply which enfeebles the absorptive process. When the frog is dried more or less by long exposure to the air, his body eagerly takes up the moisture which is presented to any part of the surface. When, on the other hand, his body is thoroughly moistened, and the supply of water is in contact with the larger part of his surface, the power to absorb an aqueous fluid of a higher specific gravity than water from any one part of the surface is considerably lessened. Of course the presence of water is essential to the production of the viscous mucus, which is supposed to be the means of protecting the wetted frog, but it is also probable that the varying supply of water regulates the rate of absorption of aqueous solutions placed in contact with a part of the skin, or, as we shall now show, in the interior of the digestive canal.

Absorption from the Digestive Canal.—Expt. A small frog received in his stomach thirty drops of a solution of vao, one grain to the ounce of water. The dose was given through a glass tube, whose edges were carefully rounded that the mucous membrane might not be wounded. None of the poison escaped. The frog was placed on a damp cloth in a receiver containing a wetted sponge. At the end of nineteen hours and fifteen minutes he was found to be inert and sluggish, though still able to raise himself when suspended by one leg. In twenty-two hours longer he was unable so to lift himself. Seven hours later all motion had departed—the bared muscles were feebly irritable to galvanic stimulus, and the heart beat in successive minutes 2, 2, 2.

Expt. A second frog which had received the same dose in the same way, and at the same time, and which had also been placed in like circumstances, died during the ensuing night.

Expt. A small frog received thirty drops of the same solution and was at once placed in water. At the end of four days he was perfectly well.

Expt. Two small frogs received each of them thirty drops in the stomach,

and were placed together in water. No. 1 lost all reflex and voluntary motions at the close of twenty-four hours. On examination no sufficient cause could be found to explain his early death.—No. 2 was well and active after five days.

Expt. A small frog received in his mouth a morsel of vao, which he twice rejected—it was finally placed far back and to one side. He was then left upon paper, that the poison might be seen if again rejected; a large receiver was then placed over him and he was left to himself at 12 M. He died during the ensuing night.

It follows from these experiments that vao in the dose here stated is poisonous to frogs when placed in the mouth or when directly carried into the stomach. It will also be observed that the frogs which, after receiving this dose, were placed in water, suffered but little—one out of three perishing within four days, while frogs of the same size who were treated in like manner, except that they were confined in an atmosphere more or less dry, one and all suffered from the poison. Still, as it was possible that the frogs which, being placed in water, survived, might have rejected the poison, or diluted it largely and frequently by swallowing the water in which they were placed, it became necessary to test this negative result.

Expt. Accordingly a frog of middle size received in his stomach by a tube thirty drops of the one-grain solution. Three wire ligatures were next carried through the skin of the upper and lower jaw, at a little distance from the lips, and firmly twisted, so that no water could easily enter or leave the mouth. Thus prepared, the frog was suspended in water, his head alone remaining above the surface. At the close of the second day he was rather sluggish, but on being released and allowed to remain at liberty for a time he did not seem to have been materially affected. Replaced in the water, he was observed at intervals up to the close of the fourth day, when, as he seemed in no wise the worse for the poison, he was set free, and the observation ceased. It is not, therefore, direct dilution with water which renders the ingested poison so harmless to frogs kept in that fluid.

The power of different parts of the intestinal canal to absorb the vao poison was also the subject of numerous experimental tests. The stomach was the organ first essayed, and to try its absorbent powers, we utilized a fact in the physiology of the frog which has been known to one of the authors of this paper for some time, but which we do not find elsewhere referred to. Under certain circumstances, a detailed account of which will be found in a note, the frog can be made to evert first the œsophagus and then the stomach, so that it is literally turned inside out, and projects from the mouth, its internal or mucous coat being exposed to the air.[1]

[1] Some time since, one of us, Dr. Mitchell, observed that when an irritating substance, such as tinct. veratrum viride, is poured into the mouth of a frog, the animal sometimes, by a sudden effort, everts the œsophagus, and then the stomach, so that the mucous surface of the latter organ projects from the mouth. If the frog be left to himself, he remains rather sluggish for a time, and finally returns the viscera to their usual places apparently none the worse for this extraordinary performance. Suspecting that the pressure upon the abdominal walls, which cannot well be avoided when holding a frog, might have been influential in forcing the stomach out at the mouth, an attempt was made to produce the result in this manner alone, but without success. Since these facts were observed, Dr. James Darrach informs us that he has twice seen frogs who had thus everted the viscera while in water and at perfect liberty. At all events, it is very difficult by any manage-

Expt. A large frog thus prepared received on his everted stomach a morsel of vao made into a paste with a little water. A portion of the mucous membrane of the œsophagus at some distance was then secured in the grasp of a Liston forceps, and the shank of the handle slipped over a nail which was driven into the table. One of the fore feet of the frog was next secured by a wire so that he could not return the viscera to the belly again. A morsel of vao being placed on the surface of the stomach, he ceased to move in ten hours.

Expt. In this case the lower jaw-bone was divided on both sides, so that he would be unable to aid himself by forcing the stomach into place again. Notwithstanding this precaution, the frog reverted his stomach after the lapse of some hours, but not before he had exhibited indubitable signs of being poisoned. He died within twenty-four hours of the administration of the vao.

Expt. Two frogs were similarly treated, except that no vao was placed upon the everted organ, and that in one case the stomach was transfixed with a needle and thus retained in its strange position during twenty-four hours. The other frog restored the viscera to their places within two hours. When the needle was withdrawn from the stomach of the first frog, he made no immediate effort to replace his organs. Being put in water he seemed sluggish, but on examination next day proved to have succeeded in re-arranging his disturbed anatomy. Both frogs were well three days later.

In these experiments the stomachal mucous membrane was rather dry, and the whole organ much congested. The effect was less rapid than in the following experiment, where no doubt the local circulation was less interfered with.

Expt. The abdomen of a large frog being opened, the stomach was drawn out, and a ligature tied around the pyloric extremity. A morsel of vao was next slipped into the stomach through a slit in the œsophagus, and ligatures placed about the cardiac end of the viscus, and about the œsophagus above the wounded part, which was carefully excised. The vao acted fatally within two hours, an unusually sudden effect to be produced by this mode of using it. Lest a minute portion of the vao might have been left upon the wounded œsophagus, the experiment was repeated, with the variation of using a small tube through which the vao was carried into the stomach without opening the œsophagus, which was, however, tied just above the stomach. Poisoning took place in this experiment within five and a half hours. The frogs used had been just removed from water, and were afterwards left under bell-glasses, as usual. Still, the effect was rapid. On examining the stomachs after death, we could not see that the ligatures had cut the internal coat, although they undoubtedly did bruise it, and perhaps imperceptibly tore its delicate surface.

Absorption by the Mouth and Œsophagus.—Expt. The belly of a frog of middle size having been opened, and the œsophagus tied, the wound was closed, and a morsel of vao placed in the mouth. At the close of eighteen and a half hours he was active and well; a little jelly-like mucus could be seen at the back of his throat, tinged with the dissolved vao. Five and a half hours later his fore legs were feeble, and he could no longer lift himself by one leg when held suspended by it. Twenty hours later he was found devoid of motion in his limbs. The nerves were no longer irritable, but the heart beat three, three, three in successive minutes.

Expt. A small frog was poisoned by the subcutaneous administration of the

ment, short of the means first mentioned, to obtain this result, without the co-operation of the frog. It is probably a mode of vomiting, and a normal physiological act. For purposes of experiment, such as those described in the text, the stomach may be everted by firmly pressing the belly with one hand, and with the other passing into the stomach a thermometer with a bulb larger than the stem. As this is withdrawn, partial eversion of the organs occurs, and may be made complete by a little manipulation with a pair of forceps carefully used.

vao, which was still found after death, dissolved, in the buccal mucus of the subject of the last experiment. The mucus, therefore, does not alter the poison.

Absorption by the rectum takes place both in frogs and higher animals with considerable ease.

Expt. A morsel of vao, placed in the rectum of a small frog, produced death within thirty-nine hours.

Expt. A very large frog was opened, and the rectum divided. A morsel of vao was passed through a tube into the lower segment of the rectum, and ligatures were cast about the cut ends of the intestine, which was finally returned to the abdomen, and the wound sewed up. The frog was left under a bell-glass containing a damp sponge. He was not observed until twelve hours had elapsed, when he was found dead; the heart not beating, and the muscles scarcely irritable by galvanic stimulus. No trace of the poison could be seen in the rectum, except a small white shred, like the undissolved portion of vao which forms the sediment in its aqueous solutions.

Expt. A small rabbit, into whose rectum was thrown an injection of vao containing about one-eighth of a grain, perished within one hour, notwithstanding that he had rejected a large part of the poison.

The vao poison is, therefore, readily absorbed by the rectal mucous membrane, as was also found by other observers to be the case in their own experiments. It follows, as a general deduction from our researches upon the absorbing power of the various tissues for vao poison, that the rectum, stomach, and mouth in the frog are all capable of admitting the poison to the system through their mucous surfaces; absorption by the skin or stomach being governed, as to its rapidity, by the needs of the system for aqueous fluid.

The subject of absorption was further studied in warm-blooded animals, to ascertain whether the state of the stomach and system would affect the activity of the poison. It has already been mentioned, in the early part of this essay, that Fontana and Bernard had noticed that during digestion woorara could be ingested with an impunity which did not exist in the fasting animal. This statement we have found to hold good as regards rabbits to whom vao had been given during a fast or during digestion. Those who were not digesting always died. This is the more curious because the stomach of the rabbit is never empty, and the mere fact of the mixture of the poison with the food cannot therefore be supposed to be the protective influence. M. Bernard finds an explanation of these curious facts in the circumstance that woorara, placed in contact with the outer wall of the mucous coat of a fresh stomach, will not pass through it to a solution of sugar on the other side of the membrane. The water in which the woorara is dissolved alone endosmoses to the syrup, and the poison is left behind. It is to be presumed that the mucous coat of the fasting stomach would permit of the passage of the poison; but as M. Bernard does not tell us in what functional condition were the stomachs when removed for his experiments, we are still somewhat in the dark.

It may be well to remark, in confirmation of M. Bernard, that the rule of protection is not absolute and without exception in animals who are

digesting, since, when large doses—as one-fourth to one-half a grain—of vao are used, a death sometimes occurs even where a full meal has been previously taken.

Two very interesting experiments were made to ascertain whether the condition of the system of the rabbit, as regards water, would be found to modify the facts just stated.

Expt. At different periods two large rabbits were kept on hay and corn, and without water, for nine days. At the close of that time they were deprived of food during twenty-four hours. A feed of hay was then allowed them, of which they ate greedily. An hour and a half later in one case, and two hours later in the other, they were obliged to swallow respectively one-fourth and one-half a grain of vao broken into coarse powder. They were then allowed to drink freely. Neither animal suffered. One of them was killed three days afterwards, by introducing a minute morsel of vao under his skin. The other (seven days later) is still alive. We regret that our engagements oblige us to defer the fuller consideration of this interesting subject to another occasion, when we hope to be able to offer to the Department a more satisfactory explanation of the facts above stated than has been hitherto given.

Circulation and Respiration.—The following statements of experiments upon the effects of vao on the cardiac and respiratory movements are selected as illustrations from upwards of twenty separate records of distinct experiments upon frogs and warm-blooded animals:—

Expt. A frog of middle size was selected, and the heart exposed by cutting out a triangular piece of the front of the thorax. His heart was beating forty-eight per minute, and with great regularity. After a short lapse of time, to permit any excitement consequent upon the operation to subside, the pulse was again noted at forty-eight, and a morsel of vao was placed in a small cut in the liver. In fifteen minutes the heart pulse fell to thirty-two. Three minutes later it was twenty-seven. Again, in three minutes longer the ventricle, after some irregular movements, ceased to act. Five minutes later the auricles were beating three times a minute, and the respiratory motions of the under jaw continued. Forty-seven minutes from the time at which the vao was inserted the auricular motions also ceased. The respiratory efforts were still visible, although very feeble. The heart still responded to the galvanic stimulus for upwards of twenty-five minutes. After the heart had ceased to act the frog leaped about actively, and seemed in no respect the worse for the operation until a longer period had passed by.

Expt. A large frog received a morsel of vao under the skin of his back. At the close of forty minutes we exposed the heart. It was beating twenty per minute. Ten minutes later the auricles alone acted, and shortly afterwards all motion ceased, although the frog was still active. The auricles continued to respond to galvanism, by single beats, during another half hour. At this time the nerves and muscles were still irritable to mechanical stimulus and to that of galvanism.

Expt. A small frog received in his back a morsel of vao. At the close of an hour his heart was exposed; the ventricle beat feebly ten per minute. Ten minutes later the auricles alone moved. Again, in five minutes these also were at rest, although the whole heart responded well to galvanization during forty minutes longer. The nerves continued irritable some time after the heart ceased beating, and the muscular irritability elsewhere survived that of the heart.

Expt. A large frog was poisoned by injecting a solution of vao into the subcuticular sac of the belly. At the close of one hour, and while he was still active under stimulus and restive when held, the heart was exposed. It beat twenty-nine per minute. Twenty minutes later the auricles alone acted, though the ventricle responded to galvanism by single pulsations. The auricles were at rest after eight minutes more had passed, and when the extremities were becoming

affected by the vao. The auricles continued to act feebly when galvanized at intervals during the two succeeding hours, and while the nerves had entirely lost their irritability under stimulus of any kind.

The general muscular irritability long survived that of the heart. This organ was somewhat distended, the left auricle being loaded with blood, and the ventricle being also full and dark from the blood within it.

In six frogs, similarly treated, the auricles remained irritable under galvanic stimulus during periods which varied in the different cases from thirty minutes to five hours; while in other instances, and especially when the quantity inoculated was large, the heart refused to respond to galvanism so soon as its rhythmical action was at an end.

It will be seen from the cases here recorded that the heart usually ceased to pulsate before either nervous or muscular irritability was lost, and while the animal remained capable of all the usual voluntary motions. This is so remarkable in some instances that the frog was seen to seek a place of refuge, insinuating himself under the ledge of a test-tube rack, or hiding in the folds of a cloth left on the table.

The remaining observations upon the heart's action were made incidentally while studying the absorption of vao with reference to the various surfaces. Upon comparing these with the results last obtained, a very remarkable fact was observed with reference to the departure of irritability in the nerves and muscles, and the continuance of a pulse in the heart.

Since these experiments are stated more or less fully in the portion of this paper which treats of the absorption of vao, it is unnecessary to detail more than the facts which relate to the points in question.

In the cases alluded to, vao was administered to frogs by the skin, the stomach, the rectum, etc., as has already been described. Under these circumstances the phenomena moved more slowly, and death was postponed as late as twenty-four hours or more after the use of the poison. It was then observed that in some instances the heart still acted, though with great feebleness, after all movement had departed from the voluntary muscles. When it did stop, the irritability was very rapidly lost.

In warm-blooded animals the heart usually continued to beat for a short time after respiration had ceased. As usual, the ventricle stopped first, and the auricles next. In a cat the heart beat for fourteen minutes after respiration had been checked, and was irritable under galvanism for a few minutes longer; though in warm-blooded animals generally, who die of vao, this is not the case. In all of this class of hearts the organ presented the appearances commonly seen after death by asphyxia. It was also observed that the intestines were usually the seat of active peristaltic movements.

We could scarcely anticipate that the difference in the mode of introducing this poison into the system could so affect the after phenomena. It has indeed been noticed by others that convulsive motions are more common in animals poisoned by woorara when the poison is ingested than when it is inoculated, and this fact we have also verified; but that the action of the heart should be so differently affected by the two modes of administering the agent we have employed, was an unlooked-for result. It certainly ap-

pears from the experiments detailed, as well as from others which are not stated, that when vao is inoculated it checks the heart's action, and even in some cases annihilates its sensibility to direct stimulation, before the nerves and voluntary muscles have ceased to obey volition. On the other hand, when vao is absorbed from a cutaneous or a mucous surface, the phenomena march more slowly, and the frog is left a lifeless mass, to all appearance, his nerves deprived of responsive irritability, and his voluntary muscles only alive to the direct action of galvanic currents, while the heart is still beating, or is at least awake to the galvanic stimulus.

The mode in which the heart is arrested is worthy of note. In cold-blooded animals there is no primary stimulation of the heart. It beats progressively more slowly, until the ventricle acts only in parts of its bulk, and finally ceases to move. Next the auricles stop, the right pausing first. The manner in which the tissue of the heart behaves under the influence of corroval has been already described very fully. In fact, nothing can be more curious than the bulging out of the fibres of the ventricle in places. The same phenomenon occurs in poisoning by vao, though far less marked.

It now becomes important to ascertain the cause of this enfeeblement and arrest of the heart's action. After some thought, we have concluded that in this poison, as in the corroval, this arrest of movement is due to paralysis of the muscular fibres of the organ. This paralysis appears to be localized at first in spots here and there in the ventricle, and afterwards to become general. To it are due, we conceive, the curious projection of small portions of the ventricle when the poison is fully affecting the heart. That this is the cause of the phenomenon in question may be made clear by tying the aorta of a frog, when the same phenomena present themselves as the organ becomes paralyzed from the distension to which it is exposed. A very interesting demonstration of the cause of the local prominences which we have described as marking the action of these poisons on the central organ of circulation, may be obtained by galvanizing portions of the ventricle in a frog which has taken no vao. Wherever the current passes, there is seen at the next contraction of the ventricle a prominent red elevation. The galvanism seems to over-stimulate, and thus paralyze a portion of the tissue. The rest of the heart contracts as usual, and the weakened galvanized portions is filled full of blood, and puffed out above the level of the active surrounding tissues.[1]

[1] The phenomena here described are among the most curious and striking physiological facts which have come under our consideration. The appearance presented by the heart, either where vao or corroval has been used, or when alternating galvanic currents have affected its tissue, is not easily described, so as to give any clear idea of the extraordinary behaviour of the heart under these circumstances. When the current affects the whole ventricle, it becomes large, and ceases to beat. When a small portion of the ventricle is included in the circuit, this alone pauses, and at the next beat of the ventricle makes a hernia-like projection from the neighbouring tissues. The prominences so formed are of a deep red tint. At the next action of the heart they are less marked, and in each succeeding ventricular con-

Now, whether the paralysis of the heart is due to a direct effect upon its muscular tissues, or to a paralysis of the ganglia of the heart, is a question which can scarcely be solved without a previous determination of the exact cause of the heart's rhythmical action. Since, however, the muscles of the heart so soon cease to be galvanically irritable after they have ceased to move automatically, and since it can be shown that the muscles elsewhere lose irritability earlier than usual, it is probably a direct effect on the muscular fibre of the heart which causes its arrest. If, in fact, the loss of motion were due to a nerve paralysis, the muscular tissue ought to be long afterwards responsive to stimulus. Whereas this is not the case in corroval poisoning, and only so in vao poisoning to a less extent than is usual in cold-blooded animals. Judging from warm-blooded animals only, we should conclude that vao killed by asphyxiating the animal, and thus arresting the heart. Whereas it is most probable that it is the early enfeeblement of the circulation which gives rise to a co-ordinate arrest of those muscular and nervous functions which are essential to produce and sustain respiration.

We have, however, a better proof at hand to aid us in showing that the checked respiration is only a last link in the chain of causes which produce death. The frog will live for many hours without breathing otherwise than by the skin; yet if a frog be poisoned with vao, he dies, the heart is arrested, and certainly without asphyxia having taken place. Again, in the alligator, respiration by the lungs goes on quite actively some time after the heart has ceased to move, as we have already seen to be also the case with corroval.

Respiration.—In cold-blooded animals, as the frog, and where the poison acts rapidly, the respiratory motions of the jaw, and sometimes of the flank, not unfrequently continue after the heart's movements are at an end, but the efforts thus made do not fill the lung. When the frog is poisoned through the skin or mucous surfaces, the action of the heart long survives the respiratory motions.

The fact of the continuance of efforts to breathe after the heart has entirely stopped, has been already alluded to. In the various experiments upon the effect of vao on the other functions, will be found such record of the fact as renders it unnecessary to repeat here the statements of experiments already quoted.

Calorification.—We have not thought it requisite to examine the effect of corroval upon the temperature of animals poisoned by it, because it acts with so much rapidity that it is scarcely possible the animal could lose

traction they are less and less distinct, until only a slight flush marks the spot, and this also finally disappears. To prove conclusively that these effects are due to an over-stimulation, and a consequent temporary paralysis of the affected part, it is only requisite to over-stimulate, by mechanical means, a portion of the muscular fibres of the ventricle, when the same results occur to a more or less marked extent.

enough of heat to be appreciable, before the heart stopped. For similar reasons M. Bernard did not find any change of temperature in the animals poisoned with ordinary woorara.

In the volume so often quoted, he records a single experiment upon the temperature of animals killed by woorara, and seems to entertain no doubt as to the generality of the conclusion stated in that connection. He found that in warm-blooded animals the temperature did not fall before death. Not having a specimen of the woorara used in Europe, we are unable to verify this observation, which is doubtless correct as regards that variety of poison. In fact, it slays with such rapidity, and with so little primary effect upon the circulation, that a fall of temperature is scarcely to be anticipated where the dose is large and the death sudden. Whether any other result would occur if the amount given were so small as to insure a more lingering death, we are unable to say.

In animals poisoned by vao, the period of time which elapses between the administration of the poison and the entire cessation of movement in all the muscles except that of the heart is so considerable, that the failure of the respiratory acts is gradual. In such cases, therefore, the death is at least, in part, if not wholly, a death by asphyxia, as we have already shown; and hence a fall in temperature is naturally to be expected. The following experiments are sufficiently definite as to this point.

Expt. A gray rabbit received in the thigh a morsel of vao, at thirteen minutes after five.

Normal temperature of the rectum 101½° F. At the close of twenty-three minutes he began to chew, as though eating, gritting his teeth at intervals. His head fell forward now and then, as though he were drowsy, and was jerked up again with a quick movement, only to sink lower a moment afterwards. In twenty-eight minutes he fell on his right side, the heart beating more slowly. The eyelids next grew insensible to a touch, the pupils largely dilated, and slight convulsive motions of the ears and hind legs took place. Temperature of rectum, 97½° F. It continued to fall up to 6 P. M., when it was no longer observed. The heart was still acting at this time, beating about once in the minute.

Expt. A large and very vigorous rabbit was selected, and a thermometer oiled and introduced into the rectum, where the temperature stood at 104° F. Fifteen drops of a solution of vao in water, 3 grs. to ℥j, were then injected into the areolar tissues of the thigh, when the following series of observations were made:—

Time.	Rectal temp.	No. of respirations.	
7.20	104		
7.25	103¾	104.	The temperature with which the experiment began was unusually high for the rabbit, whose normal heat is from 101° to 102½°, or even 103° F. The rabbit had, however, struggled very violently, and hence, in all likelihood, the very elevated temperature first noted, and the consequent depression when he became entirely tranquil.

Time.	Rectal temp.	No. of respirations.	
7.30	103°	128	
7.40	102¾°		
7.43	102½	128.	Struggles.
7.45	102½	96.	Head drooping.
7.47	102¼		
7.50	102	100	

Time.	Rectal temp.	No. of respirations.	
7.52	102	96	
7.53	101¾	80	
7.55	101½	72.	Slight convulsion; eyelid irritable; pupil large; general movement of the skin muscles.
7.57	101¼	Irregular and rare.	
7.58	101		Respiration ceased; the skin muscles were still moving quite actively; the head fell; the pupils were dilated; the eyelid no longer irritable; the heart still beat feebly; at

Time.	Temp.	
8	100¾	
8.4	100¼.	Pupil contracting. At 8.8 he was opened, when the heart was found to be yet beating well though feebly. The heart was very irritable to mechanical stimulus. The muscles elsewhere responded to galvanism, but not at all to mechanical irritation. Up to 9 the temperature continued to fall, when the observation terminated.

Expt. A healthy pigeon, scantily fed, had at 1.56 P. M. a rectal temperature of 106° F., a morsel of vao being placed under the skin of his thigh. The following record of temperature was obtained:—

Time.	Temperature.	
1.56	106°	
1.58	105	
2.1	104½	
2.2	104¼	
2.4	104	
2.6	103¼	
2.8	103.	When her head drooped and fell; the eye closed, and respiration stopped.
2.14	102	
2.17	101	
2.21	100	
2.25	99	
2.29	98.	No rise of temperature was observed up to 3 P.M., when he was no longer observed.

If follows very plainly from these, and similar results which we do not think it requisite to quote, that the temperature of warm-blooded animals falls considerably before death occurs.

The Nervous and Muscular Systems.—The effect of vao upon the irritability of the nerves and of the voluntary muscles is best considered together, since, in the experiments upon this point, the condition of the nerves and muscles was recorded at the same time.

In this connection, it became necessary to determine, 1st. Whether the nervous irritability lasted as long as that of the voluntary muscles. 2d. Whether the poison affected the motor or sensory nerves first, or whether both were equally attacked at one and the same time. 3d. Whether, as in the poisoning by ordinary woorara, the irritability of the muscles remains for a greater length of time than it does after death by decapitation or otherwise.

Expt. A large frog received under the dorsal skin a morsel of vao. In forty minutes all volitional control had departed. The left sciatic nerve was then isolated, divided, and the ends put upon a piece of glass. When the central end was galvanized, slight twitches occurred in the other leg, showing that the power to carry impressions to the centres, *i. e.*, sensibility, was not extinct. On galvanizing the distal end of the nerve, the muscles to which it is distributed

contracted freely. Twenty minutes later both extremities of the nerve refused to obey the galvanic irritation, although the muscles were still excitable by direct irritation.

Expt. Four hours after a morsel of vao was placed under the skin of a frog he was motionless, and no reflex motions could be obtained, except in the eyelids. At this time the left sciatic nerve was cut across. Galvanic irritation of the digital end had no effect on the muscles, which, however, continued irritable when directly galvanized during seventeen and a half hours.

Expt. A frog was poisoned like the one last described. His heart ceased beating in thirty minutes, when the nerves were still irritable. Their vitality, however, rapidly diminished and was gone in two hours, the muscles remaining alive to galvanic irritants during fourteen hours only.

Expt. A frog received in his back a small piece of vao. In forty minutes the voluntary motions were lost, and feeble reflex actions could still be provoked by pinching the legs. The eye was still irritable. At this moment the right sciatic nerve was isolated and divided without causing muscular motions in the leg. On galvanizing the centrally connected end of the nerve, one slight movement took place in the other leg. Irritation of the digital end of the nerve produced slight twitches in the peroneal muscles. Thirty minutes later both ends of the nerve were no longer irritable. The heart and muscles were still contractile when galvanized, but not when mechanically stimulated. The left leg and the rest of the body of the frog were then carefully protected by damp cloths; a dead frog being laid upon the leg on which we had operated in order to guard it from the direct effects of the moisture. In despite of these precautions, the nervous and muscular irritability was totally extinct at the close of forty-eight hours.

Expt. A large frog received in the peritoneal cavity one drachm of the weak solution of vao, one grain to one ounce, his right femoral artery having been previously tied so as to prevent the poison from having access to the tissues of this limb. The right leg now moved with more difficulty than the left. One hour and twenty minutes after the poisoning both sciatic nerves were divided. On galvanizing them both, the muscles of the leg whose artery was tied moved freely—the nerve of the uninjured leg being galvanized, feeble motions occurred in the muscles. Half an hour later the nerve of the uninjured side lost the power to evolve movement in the muscles, while galvanic irritation of the leg whose artery was tied gave rise to free motion in its muscles. The part which was protected from the poison by having its artery tied, therefore retained the irritability of its motor nerves longer than the part which was exposed to the poison. On dividing the spinal column, half an hour later, in this frog, and thrusting a probe upwards, the eyes alone moved; when the probe was thrust downwards no motion resulted.

Expt. A large frog received in his back, under the skin, fifteen drops of a solution of vao, of the strength of five grains to one ounce of distilled water. At the close of three hours, the nerves of the leg were cut across and galvanized at the digital end, causing some movement in the muscles of the calf and foot. The muscular irritability was already enfeebled. An hour later the motor nerves had lost all irritability, while the muscles were so much enfeebled that they responded but slightly when directly galvanized. The muscles of the under jaw remained irritable longer than any others, and this is usually the case in poisoning by vao.

It becomes sufficiently clear from the foregoing experiments, that under the influence of vao, the irritability of the motor nerves in the frog is lost very early, and that the irritability of the muscles is also enfeebled and finally destroyed much sooner than is usual.

It is also clear that in frogs which are poisoned rapidly by a large dose of vao, the nerves of motion cease to functionate before the muscles are deprived of the power to respond to direct stimulus—another proof, if any

were needed, of the independence of the muscular irritability, and of its absolute want of connection with that of the nerves.

To make the matter more perfectly clear and definite, a number of comparative experiments were made.

Expt. A frog was poisoned with the vapour of ammonia. At the end of twenty-four hours none of his muscles were irritable. They were not examined earlier than this.

Expt. A frog killed with atropine retained his muscular irritability during twenty-seven hours and thirty minutes, when the observation terminated.

Expt. Of two frogs killed by decapitation, the muscles remained irritable in one during thirty-nine, and in the other during forty-eight hours.

Like results were obtained in all cases of death by decapitation. Now it is well worthy of remark that on comparing our own researches upon this special point with those of the French observers, it is seen that the normal irritability of the muscles is less persistent in our frogs than in those used by the *savans* in question. In many instances stated by Bernard and others, the muscular irritability of decapitated frogs lasted during five or six days, whereas in no case has it remained in our own frogs after fifty hours. The temperature is one of the most important factors in this very interesting problem. In warm weather the irritability departs very early, and unfortunately M. Bernard does not state the condition of the thermometer at the time he made his experiments. Our own researches were conducted in a room whose temperature ranged during the period of our examinations from 49° to 68° F.

The determination of the fact of the early loss of muscular irritability under the use of vao, separates it widely from ordinary woorara, which, according to M. Barnard, not only does not weaken the muscle, but actually prolongs very remarkably the period during which they may be made to respond to galvanic or other stimuli.

In no instance was it found that vao affected the movement of the cilia in the frog's throat.

Having thus determined that the functions of the nerves are destroyed before those of the muscles succumb, and also that the muscular irritability is weakened and finally annihilated long before the time when the same result is observed in many other modes of death, we have yet to consider the remaining questions as to the order of abolition of function in the two great classes of nerves, motor and sensor—and as to the influence of vao upon the brain and the sympathetic system.

The woorara of European observers, according to M. Bernard, acts first upon the motor or efferent nerves, and destroys all reflex acts very early, because the efferent nerve which is first paralyzed is essential to the production of these phenomena. A frog which has taken woorara is, therefore, physiologically in the same state as one which has had the motor roots of the spinal nerves cut across. To test this with vao poison—

Expt. A large frog was selected, and a ligature tied around the right femoral artery. The voluntary actions ceased very early. The legs were sensitive to

direct galvanic stimulus. Slight reflex movements occurred in the legs, and the eyelids winked when touched. When the belly or back was galvanized, the leg in which the artery was tied responded by reflex movements. The other leg did not stir. On isolating its nerve and galvanizing the distal end, its muscles moved, though feebly. The nerve of the other leg being similarly irritated, vivacious motions took place in its muscles. The poison had gone too far and acted too rapidly to make this a satisfactory experiment. It showed doubtfully that both orders of nerves were affected to some extent, and it also indicated the greater tenacity of life in the upper part of the body, where the eyelids continued irritable and where the muscles under the jaw responded when the motor manifestations were weak in all other parts of the body exposed to the action of the vao. At the close of an hour and a half the spine was destroyed, when the leg which had been operated upon moved slightly. No other motion resulted and the muscular irritability was extinct in five hours.

Expt. A large frog poisoned by vao was motionless in three hours, save that the eyelids still acted. His left femoral artery had been previously tied. The right sciatic nerve was exposed, divided, and the two ends insulated on glass. As the poison had been cut off from the left leg, it could not share in any supposed loss of motor power, should such exist. If motion was lost in the poisoned parts and sensation remained, an irritant applied to the centric end of a nerve in the poisoned part would convey the stimulant effect to the nerve centres of the spine, and the nerve of the unaffected limb ought to acknowledge the irritation by reflex acts. The irritation of the poisoned nerve would be felt by the nerve centres, but in case the motor functions of the poisoned parts were abolished, no muscular reflex act could result anywhere, save in the unpoisoned limb, whose nerve and muscles would, so to speak, translate into the language of motion the reflected impression. Such does occur with ordinary woorara. In the present instance neither the galvanization of the fore legs nor of the centric end of the right sciatic caused motion in the unpoisoned leg, which, however, moved vivaciously when directly stimulated. A probe thrust down the spine produced free motion in the leg the artery of which was tied, and some twitches in the other. The defect of reflex motion was, therefore, not due to want of life in the motor nerves or the spinal centres.

Expt. The sciatic nerve of the left leg of a frog was isolated, and a wire being passed beneath, it was carried around the rest of the limb and tightly twisted. Vao was then employed as usual. The right brachial nerve was galvanized after the reflex motions had become extinct to all appearance—slight movements took place in the leg of the same side, but no form of stimulus applied to either brachial nerve caused motion in the leg on which we had operated. The twitches above mentioned showed, however, that both motor and sensory power was feebly preserved even in the poisoned parts. A little later no such motions could be had, although the poisoned limbs still moved for a time when their nerves were directly stimulated.

Expt. A very large frog had his sacrum removed, so as to expose the lumbar nervous plexus. A ligature was cast about the rest of the body, excluding these nerve-trunks. As the ligature arrested the circulation, the bridge of nerves alone connected vitally the two segments of the frog. A solution of vao was now injected under the skin of the trunk, above the ligature. Two hours later, the reflex acts being at an end in the upper parts of the frog, the brachial nerves were irritated, but without evolving the slightest motion in the unpoisoned limbs. Direct stimulus applied to the lumbar plexus caused free movement in the legs.

In the next experiment the brain was removed before the frog was poisoned. His reflex motions were well developed, but faded rapidly. The nerves of the arms were galvanized, and by degrees lost the power to provoke motion elsewhere; while, at the same time, their muscles still moved when the distal end of the nerve was galvanized.

Expt. A large frog was chosen, and the heart exposed. A large amount—twenty drops—of a solution of vao, five grains to the ounce, was put under the skin of the back. In fifteen minutes the ventricle stopped, and the auricles also ceased beating in twenty-five minutes. Three hours after the poisoning one sciatic nerve was uncovered and galvanized by a powerful alternating current; the

muscles of the same leg responded freely. The nerve was then cut, and the centric end galvanized, without any reflex acts occurring. The lumbar nerves were next tested, but still with no result as to reflex motion elsewhere. Finally an examination of the nerves of the other limbs showed that their nerves still retained motor power, and that their muscles were sufficiently irritable.

It becomes very clear from these experiments, and others which we cannot afford space to quote, that vao acts first upon the sensitive nerves, and not, like other woorara, upon the motor filaments. Its next action is upon the motor function of the nerve-trunks, and lastly upon the independent irritability of the muscles.

In almost all of the experiments, although the fore legs were first affected in the paralysis which finally involved all parts, the respiratory muscles under the jaw and the muscles of the eyelids remained active long after all the rest, although so feeble that their efforts did not suffice to fill the lungs.

It has been shown conclusively, in the early portions of this paper, that the mere stoppage of the circulation by ligation of the vessels at the base of the heart produced a rapid and complete loss of nervous but not of muscular irritability. The paralysis of the nervous system, under the use of vao, is therefore due, in all probability, to the enfeeblement and final loss of cardiac power. The defect of muscular irritability must be a result of the poison acting on the tissue of the muscles themselves.

Effect of Vao on the Blood.—After repeated examinations of the blood of animals killed by this poison, we have been unable to trace the slightest alteration in the form of the blood-globule when the perfectly fresh blood was inspected. If it be allowed to stand some time, either within the animal or after removal from his vessels, the usual alterations in the form of the disks may be seen. One observer, at least, has conceived that ordinary woorara affected the forms of the blood-disks; but all subsequent investigations have been opposed to this view, and it is probable that his examination of the vital fluid was delayed so long as to permit of those osmatic changes in form to which the delicate red corpuscles are so familiarly liable.

We have also studied the blood with reference to the influence of vao on its coagulation, and on its power to absorb oxygen. Neither in frogs, in rabbits, nor in birds, has vao appeared to retard the coagulation of the blood. In one single case, that of a cat, was this act unusually delayed.

In the frog and the alligator the lung appears to supply sufficient red blood up to the last moment to redden the heart in one-half of its area until the ventricle ceases to move. Where, therefore, asphyxia is not an essential result, as in these cold-blooded animals, the heart is checked by the vao before any marked change has taken place in the colour of the blood. In warm-blooded animals—cats, rabbits, mice, birds, etc.—the final link in the chain of causes which produces death is asphyxia from want of muscular movement. Here the blood is black, and the heart presents the appearances commonly observed in asphyxiated animals. The power of this dark blood to reabsorb oxygen was ascertained in the following man-

ner: The blood of a large rabbit, poisoned with vao, was whipped as it escaped into a vessel, to free it from fibrin. Thus prepared, it was agitated in a bottle with atmospheric air, when it was soon observed to have recovered its bright arterial hue.

Before we call attention to the subject of the differences between corroval, woorara, and vao, it has occurred to us that it would be as well to state here the physiological evidence bearing upon the question of what it is that gives the deadly potency to corroval and vao. A portion of such evidence is to be found in the chemical and microscopical characters of these poisons, and we shall in this place insist alone upon certain interesting physiological facts. The old opinion as to the activity of woorara being due to the venom of poisonous serpents is still to some extent a popular belief. To examine this matter anew, with reference to the poisons before us—

Expt. A large frog was chosen, and a small scale of dried venom from the rattlesnake was placed under the skin of his back. This poisonous material is nearly two years old, and is in the form of dry yellow scales upon the side of a bottle. It was obtained by one of the authors of this paper (Dr. Hammond), by holding a snake with his upper jaw over the edge of the bottle, so that, on irritation, he discharged his poison into its interior.

During twenty-five minutes the frog, poisoned as described, was unusually active. At the close of this period he became more quiet, and occasional twitches were observed in the hind legs, which were also extended spasmodically at intervals. Ten minutes later he lay quiet as placed, in any position, breathing at intervals. The eyelids were irritable, and reflex motions could be provoked. All voluntary power seemed to have fled. One hour and ten minutes later the reflex motions still occurred when irritants were used, and the twitching and extension of the legs continued. He was now becoming rapidly enfeebled. Two hours and fifty minutes after the administration of the poison no motions could be evolved, and he was then laid open. On applying the galvanic current to the voluntary muscles no motion occurred, and the nerves were, of course, unable to produce any muscular response when galvanized. The heart was still beating.

A second experiment, of a similar nature, was made upon a large frog, with nearly similar results, except that death did not occur until five hours after the venom was used. It was noted in this case, as a curious fact, that the eyelids were insensible before the reflex movements of the extremities were lost. After all reflex motion had departed, the heart, which was large and almost black, continued to act during more than two hours in all of its cavities. During this time the nerves and muscles were more or less irritable when galvanized. The vitality of both nerves and muscles was lost within five hours after the heart had ceased to act.

These two cases differ from one another in certain particulars which demand the future criticism of experiment; but at present it is enough to point out the dark and swollen state of the heart, its long-continued and perfect action in all its parts, and the occurrence in both frogs of local spasms of the muscles, as well as occasional convulsive extensions of the hind legs, as marking a difference between the venom and both corroval and vao, which we hope to examine more fully at another time.

It might naturally be supposed that the local character of the wounds would also constitute a further ground of distinction. We were not astonished, however, to observe that the rattlesnake poison produced no local effect in the frog. The wound in which was placed vao, corroval, or the dried

venom of the *Crotalus confluentus* was not in any way to be distinguished by the eye. Meanwhile, it is to be observed that the animals used were cold-blooded reptiles, which are not capable of developing inflammatory action, such as is observed in the tissues of mammals similarly treated.

Again, it is worthy of note that the venom employed was two years old, and perfectly dry. How far this may have modified the result we are as yet unable to say. A pigeon, poisoned with the dried venom of the crotalus, died in two hours and fifty-two minutes. Two minutes after the wound was made in his thigh it had become black. Around this a ring of a deep amber colour was seen, and before death a dark serous fluid exuded from the wound. A simple wound made at the same time exhibited no such phenomena. Very little swelling occurred about the poisoned wound, and no general swelling of the body was observed. Soon after the inoculation was effected the pigeon rocked on his feet, staggered, fell, and rose again, flapping his wings and vomiting corn from the crop. A half hour later he gradually sank down, the breathing grew laboured and uneasy, and the heart beat rapidly. The temperature fell to 94° F. one hour and thirty-two minutes after the poisoning, and continued to fall, until, when it reached 88° F., death occurred, during general but not very violent convulsions. Rigor mortis came on within forty-two hours. On examination of the blood-globules, they presented no unusual or abnormal peculiarities. The local affection is in this warm-blooded bird the distinctive difference between the action of vao or corroval and that of the serpent poison. In both cases asphyxia is in warm-blooded animals the last link in the chain of causes which produce death.

It is, then, highly improbable that the venom of serpents is used in the manufacture of the poisons before us. As it is stated that ordinary woorara is formed from the juice of the *Strychnos toxifera*, and as the alliances of this plant would seem to make it probable that it contained strychnia, it became interesting to know whether that substance might not have been so altered by the long boiling required to prepare the woorara as to change its character and affect its toxicological peculiarities. Accordingly a grain of strychnia was boiled with gum starch and water for nine hours, without in the least impairing its peculiar qualities. A frog poisoned with the mixture died, tetanized as usual. We desired to ascertain, in the next place, whether, if our own vao poison contained strychnia, it would be so modified by the other constituents of the poison as to lose its peculiar powers. A minute portion of strychnia was therefore added to a little vao, and the two poisons inserted under the skin of a frog. He perished in tetanic spasms, and the heart stopped soon after death. The same effects were observed when corroval and strychnia were separately introduced under the skin in two distinct localities. Now, as the heart of the strychnized frog will beat for some hours after all externally visible motion has ceased, it is plain that in the double poisoning both agents produced their own distinct and pecu-

liar effects. The one caused tetanic spasms, the other paralyzed the heart. It is, therefore, sufficiently clear that no form or modification of strychnia is present in the vao or corroval.

In addition to the negative evidence here adduced, we have the more positive results which have been stated in connection with the physical and chemical examination of the two poisons. From the whole evidence, we feel authorized in considering both poisons as of vegetable origin.

The history of the antidotes to this poison may be very shortly summed up.

Sir Walter Raleigh, in his very curious account of the arrow-poison, tells us that the Spaniards were cured of ordinary poisoned wounds by the use of the juice of the garlike (garlic), in which, however, he reposes but little faith. His own remedy, a knowledge of which he professed to have obtained from the Indians, he thus describes: "But this is a general rule for all men that shall hereafter travell the Indies, where poisoned arrows are vsed, that they must abstaine from drinke, for if they take any licor into their body, as they shall be marvellously provoked thereunto by drought. I say if they drink before the wound be dressed, or soone vpon it, there is no way with them but present death."[1] The next allusion to antidotes is equally vague, and it is even doubtful whether the poison alluded to has any analogy to the woorara at present known, since it is said by the authority referred to, that it kills only after seven days. De la Vega further informs us that to arrive at a knowledge of the antidote, the Spaniards wounded an Indian with a poisoned arrow, and then setting him free, observed that he chose certain herbs, which he ate, and applied locally, with entire success.[2]

De la Condamine[3] is the first writer who speaks of sugar and salt as antidotes. After returning to Cayenne, he made a few experiments with woorara, thirteen months old. Of two chickens which were poisoned by woorara, and treated with sugar internally, one died. Afterwards, at Leyden, and before Mussenbreck, Van Swieten, and Albinus, the sugar antidote totally failed. Some of De la Condamine's woorara passed into the hands of M. Hérissant,[4] who used sugar and wine as antidotes in the case of a lad who had been left to watch some of the poison which was boiling in a small and close room. The boy became weak, and was supposed to have been a sufferer from the poisonous fumes. It is needless to add that in his case the sugar acted perfectly. Not so fortunate were ten birds which were poisoned by M. Hérissant, with a mixture of Lamas and Ticunas, and instantly fed upon sugar. Nine of them perished. Salt

[1] Sir W. Raleigh. Disc. of Guiana, p. 71.
[2] The Royal Commentaries of Peru. By the Inca Garcilasso de la Vega. London, 1688, p. 741.
[3] Tr. de l'Acad. des Sci., 1745, vol. lxii. p. 489.
[4] Phil. Trans., vol. xlvii. p. 75. 1746.

proved equally unsuccessful, whereas instant amputation, or the actual cautery, saved the life of the animal. A single experiment was made as to the value of the ligature as a safeguard. Although applied to the limb beforehand, it failed entirely. M. Hérissant also essayed the effect of large bleedings, after the poison had been given to horses. Of six so treated, two recovered.

Schomburgk,[1] whose work is of comparatively recently date, repeats the old story of sugar and salt as antidotes, adding, that the whites alone repose confidence in their protecting power. The Indians, who are said to place but little reliance upon any of the supposed antidotes, mention, as the best, cane-juice (sugar) alone or mixed with an infusion of the root of the wallabo (eperua or dimorpha).

Bancroft[2] relates that "the white inhabitants of Guiana consider sugar, *i. e.*, cane-juice, as a remedy in poisoning by the acawau, a variety of woorara. The Indians themselves do not acknowledge this property of the cane, and," he adds, "I have never been able, either by my own experiments or inquiries, to discover a single instance of its efficacy for that purpose.

With Fontana[3] began the closer examinations of this singular poison, which have made its modern physiological history a matter of such deep interest. This observer found that when the mineral acids were mingled with the Ticunas poison, it was rendered innocuous as an injection under the skin, or as a local application upon the bare muscles. The same result ensued when the acids were evaporated with the poison, and the residue was employed. Neither vinegar nor rum were of any avail as antidotes, when mixed with the Ticunas.

Osculati[4] also alludes to the antidotes, and states that a mixture of salt and sugar acts as such when taken freely, but that it is also essential to place in the wound a weapon dipped in this mixture, and to continue taking the not very agreeable compound of dissolved salt and sugar for some time afterwards. This statement is mere hearsay, and rests upon no experiments by the author of the paper in question.

The experiments of Drs. Brainard and Green, first in Chicago, and afterwards in Paris,[5] lead these gentlemen to consider the mixture of iodide of potassium and iodine as an antidote, when mingled with the poison in solution. These experiments are quoted and commented upon by Dr. Green himself, in a paper on woorara, which he has written since the date of the communication to the Academy, of his own results, and those of Dr. Brainard.[6] The last named researches shortly afterwards elicited from M. Reynoso an admirable paper[7] upon the use of various agents as antidotes

[1] Schomburgk, 1847.
[2] Bancroft, p. 297.
[3] Fontana, vol. xi. p. 118. 1781.
[4] Osculati, p. 201. 1850.
[5] Comptes Rendus de l'Acad., vol. xxxviii. p. 411. 1854.
[6] Am. Med. Gaz., vol. vii., Nos. 5 and 7; vol. vii., No. 1; 1855–6.
[7] Reynoso. Comptes Rendus de l'Acad., vol. xxxix. p. 68. 1854.

to woorara. In reviewing the essay of Drs. Brainard and Green, he classes as a caustic the iodine solutions employed by these gentlemen. He, therefore, attempted to render the iodine harmless to the tissues, while securing its primitive action upon the woorara. Having found that iodide of potassium used alone with woorara solution, did not prevent, but merely delayed its ultimate manifestations, he made the following experiments :—

Half a gramme of iodide of potassium, and 0.4 gramme of iodine, with 0.06 gramme of curare in solution were treated with hyposulphite of soda, drop by drop, until the iodine disappeared, when the mixture was rendered alkaline by the addition of carbonate of soda. This mixture killed in twenty minutes, when injected under the skin. A mixture of alcohol, iodine and curare did not prove fatal; but when, in such a mixture, the iodine was rendered inactive, by the use of the hyposulphite of soda, poisoning followed its use, in one hour and forty minutes. M. Reynoso thence concludes that iodine alters the poison, but does not destroy it. Hypochlorite of lime also delayed the action of the woorara. Experiments were further instituted, which seem to show that chlorine in a nascent or free state, destroys the poison. Chloride of sodium mingled with it did not save the animals tested with this mixture.

In another series of experiments, the author added 10 gtt. of bromine to 0.06 gramme woorara, and 7 cubic centimetres of water. This mixture was rendered fully alkaline by carbonate of soda and some few drops of hyposulphite of soda were added. It was injected into the subcuticular tissues of an animal, who died in 24 hours, in collapse, poisoned by the bromide of sodium, which, used alone, was found to be fatal in a like dose. When a mixture of woorara and bromine was heated until the bromine escaped, the residue was harmless when injected into animal tissues.

Sulphuric and nitric acids, caustic potash, lime-water, and ammonia-water, all retarded the action of woorara when mixed with it. Certain salts which are not caustic, such as the iodide and bromide of sodium, and iodide of potassium, also exercise a retarding influence; but this effect M. Reynoso looks upon as undoubtedly local, since iodide of potassium, given internally, does not prevent the poison from proving active when afterwards used subcutaneously. Both Messrs. Brainard and Green, and M. Reynoso are of opinion that the application of the cupping-glass, so long as it is kept applied, prevents the poison from being absorbed.

Notwithstanding the ingenuity of M. Reynoso's experiments, they do not entirely settle the question of antidotes to woorara, and while the action of certain salts in delaying the absorption, or the after-action of the poison, is distinctly made out, we are still left in the dark as to the cause of this effect from the use of an agent so harmless as iodide of potassium. Even upon M. Reynoso's showing, the solution of iodized iodide of potassium used by the American experimenters would have the double advantage of a cauterizing and a delaying agency when used with the poison, or put instantly upon the wound.

With woorara, as in many other kinds of poisoning, artificial respiration maintained for a length of time, saved the animal, when the dose of the poison was not overwhelming. Waterton's experiments on this subject are very striking, and are the last to which we shall refer, since the very recent writers, as Kölliker and Bernard, have merely quoted their facts from M. Reynoso's paper, which we have already analyzed. It is unnecessary to quote here the simple experiments which satisfied us that neither

sugar nor salt has any claims to be regarded as antidotes. Since, however, Brodie, Waterton and others had previously found, that by sustaining artificial respiration, time was allowed for the elimination of the woorara, and the animal escaped death, we resorted to the same expedient in rabbits and cats poisoned by corroval and vao. In no instance was the death even so much as retarded, and the heart ceased to beat as soon as usual. This result could have been anticipated, from the fact that in the alligator thus poisoned, respiration continued perfect long after all cardiac movement had departed. In one sense, therefore, corroval and vao are more deadly agents of destruction than common woorara, since, for them, no physiological antidote of any kind exists, while in poisoning by woorara, at least one resource is available.

Conclusions.—1. Vao, either in a solid, or more quickly in a liquid form, can be absorbed from the areolar tissues of cold-blooded animals as the frog.

2. It is also absorbed by the stomach, œsophageal mucous membrane, rectum, and skin, with a degree of rapidity which varies, and is rapid or slow as the animal is ill or well supplied with water.

3. Warm-blooded animals absorb vao from the stomach and intestine when they are fasting, but suffer no ill effects when the vao is given during digestion. That this protection is not due to a mere mixture of the vao with the food of the full stomach, is shown by the fact that rabbits, whose stomachs are always more or less distended with food, are protected only when owing to the entry of fresh food, digestion becomes active.

4. The demands of the system for water do not affect to any perceptible extent the absorption of vao from the stomach of the rabbit.

5. The circulation of the frog is arrested within from ten minutes to one hour by the introduction of vao under the skin. The same result obtains within from twenty-four to forty-eight hours, when the poison is swallowed in small doses.

6. The first effect of vao is to increase the force of the heart without increasing the number of its pulsations.

The next effect is a paralysis of the muscular tissues of the heart, so that the ventricle stops first and the right and left auricles next, in the order in which they are named. In a majority of the frogs poisoned by vao, the heart remained galvanically irritable for a certain time after the organ had ceased to pulsate.

The heart stops before the voluntary motions are at an end, in all cases of rapid poisoning. When poisoning occurs by absorption from a mucous surface, the phenomena march more slowly, and voluntary control and reflex power are sometimes lost before the heart has entirely ceased to beat.

7. Vao stops the respiration in warm-blooded animals by arresting the circulation, and so paralyzing the nervous system, without which respira-

tion is impossible, so that the checked respiration is a consequence and not a cause of the injury to the cardiac functions.

In the batrachia also, the respiratory movements cease before the heart has entirely lost the power to pulsate.

In the alligator poisoned by vao the respiration is perfect some time after the heart is at rest.

8. The facts last quoted and the inability of artificial respiration to restore or sustain the cardiac movements in warm-blooded animals poisoned by vao, proves sufficiently that the first effect of the poison is upon the heart, and that the appearances of asphyxia observed post-mortem in rabbits, cats, etc., are of secondary importance so far as concerns the cause of death.

9. The temperature of warm-blooded animals poisoned by vao falls with considerable rapidity, and does not undergo any elevation after death.

10. The nerves of sensation first lose their power to convey impressions—the motor nerves are next affected. The paralysis of the nerves extends from the periphery to the centre. The affection of the nervous system may be due to the sudden arrest of the circulation, and not of necessity to the direct influence of the vao. The irritability of the voluntary muscles in the frog is lost much earlier than is the case when the animal dies by decapitation.

11. The sympathetic nerve is paralyzed, at least in the upper portion of its distribution, before the nerves elsewhere have lost their functional power.

12. The ciliary motion is unaffected by the use of vao.

13. The blood of animals thus poisoned coagulated as usual, and had not lost the power of changing colour when exposed to oxygen or carbonic acid.

14. So far as we are aware, no true physiological antidote exists for vao poison, since even artificial respiration fails to sustain life in animals affected by it.

15. The vao poison closely resembles corroval in its physical, chemical, and physiological reactions. The alkaloids extracted from the two poisons produce in animals of equal size effects which cannot be distinguished.

We, therefore, are inclined to consider vao as merely a weaker variety of corroval, and to conclude that the apparent difference in the effects produced by the original extracts is due to a difference in their strength.

We have thus brought to a close an investigation which has involved considerable labour, and we now submit our results for the consideration of the Department. No statement has been made in this essay, and no conclusion deduced, of the accuracy or truth of which we at least are not fully satisfied. How far this may be the case with others we cannot say; and, at all events, whatever be the fate of these researches, we shall at least have had the pleasure of the pursuit, and the satisfaction of stimulating

inquiry upon questions of interest and importance. With the words of the venerable Abbé Fontana, whose labours in the field of biological investigation have been too much neglected, we would say, in conclusion, "Those only who observe and experiment make mistakes, those only who do neither, never err."

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ART. II.—*Report of Cases in which Metallic Sutures were employed* By H. LENOX HODGE, M. D., Resident Physician in the Pennsylvania Hospital.

THE following cases seem worthy of being placed on record, both on account of the interest now felt in the subject of metallic sutures, and the advantages which I have seen result from their application. I shall relate the cases in the order in which they occurred.

CASE I. *Incised Wound of Hand. Sutures of Annealed Iron Wire.*—Philip O'Donnell, æt. 18, came to the hospital, February 13, with an incised wound, two inches in length, on the back of the left hand. It was made, he said, by a knife, about an hour previously. The wound gaped widely, and the sheaths of the extensor tendons were exposed, but not opened. The whole hand was hot, and the back of it quite red. There was a little hemorrhage, which stopped entirely upon the edges being approximated, and held in contact by three sutures of fine annealed iron wire. The wire did not follow the needle well; for, pliable as it is, it could not be accurately and closely bent over the eye of the needle. The interrupted suture was used, the ends of the wire being twisted together. The next morning the edges were agglutinated throughout the whole extent of the wound; but the hand was swollen and painful, and on each side of the wound, at the orifice made by each suture, lay a drop of pus. I removed the sutures at once. This caused some pain, because of the roughness of the wire when cut, and the rectangular shape of the suture. Under appropriate measures, the inflammation quickly disappeared. Then, by means of adhesive plasters and bandages, the fingers were kept in a state of extreme extension, and the wound readily closed. He was discharged well, February 24.

CASE II. *Chronic Ulcer. Sutures of Lead Wire. A Suture of Silver Wire.*—Henry Pool, æt. 22, had been suffering for many months from an indolent ulcer on the foot, after frost-bite. Under various applications it slowly healed, until it was about the size of the end of one's finger. Here it remained stationary for a long while, uninfluenced by any application. On Thursday, February 24, I cauterized the edges with nitrate of silver, and attempted to bring them in contact by means of two interrupted sutures of fine lead wire. I succeeded as regards the lower half of the ulcer; but above, the edges would not quite touch. The lead wire followed the ordinary needle readily, was perfectly pliable, and could be cut with the greatest facility by the smallest dressing scissors.

25*th.* The sutures have not caused the slightest soreness, nor inconvenience of any kind. He broke the upper one, by rubbing it this morning. I reapplied it as before. I allowed the sutures to remain until the eighth day, without the parts being apparently conscious of their presence, then removed them both, without giving the slightest pain, and found the lower half of the ulcer cicatrized, the upper half nearly as before. I again cauterized the edges with the nitrate of silver, and this time made them meet by means of a suture of fine silver wire. I used the silver wire because,

being stronger, it could be drawn tighter than the lead, without breaking it; and because I wished to observe its effect upon the same tissues. It caused no irritation whatever; but on account of the strain upon it, was gradually cutting out; so that on the third day, being quite loose, I removed it. The ulcer was still about half its size; and, under several applications, it slowly improved.

CASE III. *Amputation of Finger by Teale's Long and Short Rectangular Flap Operation. Lead Sutures.*—William Thompson, æt. 14, has been suffering for several weeks, from onychia in the distal phalanx of the third finger of his left hand. The finger is much congested and swollen, the nail is gone, the bone is bare, and in many points deeply ulcerated.

March 11. I removed the distal phalanx, by Teale's[1] operation, and made, in this instance, the long rectangular flap, from the palmar surface, and the short rectangular flap from the dorsum of the finger. The flaps were brought together by three lead sutures (two above and one at the side), and some strips of adhesive plaster. In three or four days the flaps had united, and the suture on the side being loose and now useless, was removed. There was no sign of inflammation around any of the sutures; but at the corner of the wound, where two ligatures of silk lay, there was a slight ulceration. I left the remaining sutures until the 18th; during this week they did not cause the slightest apparent irritation. On the 23d, the cicatrization was complete in every part, and the boy was discharged.

CASE IV. *Resection of Phalanx. Lead Sutures.*—Joseph Barr, æt. 14, had the fore finger of his left hand nearly severed this morning (March 16), through the second phalanx, by a circular saw. The bone was completely divided, and slightly splintered. The arteries appeared to have escaped uninjured. I attempted to save the finger, by resection of the ends of the bone, and removed about a quarter of an inch from one end, and a little less from the other; then cut off the lacerated portion from the edges of the wound, and applied three lead sutures; placed the hand on a palm-splint, and covered it with lead-water and laudanum. On the second day the suture on the outer side, where the parts had been most lacerated, had cut out, and was therefore removed. On the fifth day I removed a second suture, and found the edges had united on the upper and inner surfaces. The other suture I allowed to remain until the thirteenth day, and could detect no irritation resulting from its presence. In this case I noticed (and have since seen it repeatedly), a black glistening deposit near the sutures each morning. This I suppose to be a hydrosulphate of lead; it causes no inconvenience, and is very readily washed off.

April 7. The boy being tired of being away from home so long, was by request discharged. There still remained one or two fistulous orifices.

I have since heard from the boy, though I could not succeed in seeing him. He was at work, his aunt told me, with a useful finger, being able to pick up a needle with it; but the sore had not quite closed yet.

CASE V. *Amputation of Finger by Anterior and Posterior Flaps. Lead Sutures.*—William Selkirk, æt. 15, had the end of the second finger of his left hand crushed by machinery, on the afternoon of March 16. I amputated by the anterior and posterior flap operation, dividing the bone

[1] On Amputations by a Long and a Short Rectangular Flap, by Thos. P. Teale, F. R. C. S., London, 1858.

at the middle of the second phalanx, and brought the flaps together by three lead sutures.

19*th*. Finger much swollen, and painful. I removed the sutures and found the edges of the wound united throughout. The finger continued to swell; inflammation extended to the hand, and pus forming in the sheaths of the flexor tendon, necessitated a deep incision along the finger, after which the parts slowly recovered themselves. He was discharged well, April 11.

CASE VI. *Contused Wounds around the Eye. Lead Suture.*—Cordelia Reynolds, æt. 31, having been struck by a boot, was admitted to the hospital, with a contused wound about one inch in length, over the left eyebrow, and another contused wound, about half an inch in length, at the inner corner of the lower lid of the left eye. In each I used a lead suture to bring the edges in contact. On the fourth day the sutures were removed, and the wounds were well.

CASE VII. *Gunshot Wound. Lead Suture to a part of the Wound.*—Frederick Perkins, æt. 22, received a gunshot wound of his left hand, from the explosion of a pistol. Much of the palmar surface of the fore-finger was torn away, and the flexor tendons exposed; and extending from below, half-way across the back of the finger, was a clean cut, almost like an incised wound. The edges of this part of the wound I kept in apposition by a lead suture, and exposed it to a considerable strain, by bending the finger over the block of a Bond's splint, for the greater comfort of the patient, and for maintaining the flexed position in case of anchylosis. On the fifth day the suture, which was still tight, was removed, and this portion of the wound was found to be healed. The rest of the wound in several weeks closed by granulation.

CASE VIII. *Incised Wound of Neck. Lead Sutures.*—Henry Hamilton, æt. 32, attempted to commit suicide, while drunk, by cutting his throat with a shoemaker's knife. He inflicted on himself, a little to the left of the thyroid cartilage, a wound of about an inch and a half in length, through the skin and fascia merely. The wound bled freely, and gaped widely. Two silk ligatures and three lead sutures were applied. On the third day erysipelas began. Ligatures and sutures were at once removed. In a few days the erysipelas disappeared. He was perfectly drunk when brought to the hospital, had been in the habit of drinking to excess, and while here had an attack of mania-à-potu. The wound healed by granulation, and during the third week he was discharged, well.

CASE IX. *Amputation of Finger by Palmar Flap. Lead Sutures.*—Ellen Fitzpatrick, æt. 18, has been suffering from onychia for several weeks. Last year one of her fingers was amputated by Dr. Neill for the same disease. The finger now affected is so much injured as to require amputation at the junction of the second and proximal phalanges. The operation was performed by Dr. Neill, April 2, by making the flap chiefly of the palmar surface. The flap was much thickened, and not at all pliable, and thus caused a great deal of strain upon the three lead sutures I introduced. On the fourth day one suture had cut out, and was removed; the other two I took away on the sixth day; and the union was complete, except just at the edges. The parts soon contracted with the assistance of strips of adhesive

plaster, and on the 13th the line of cicatrization was complete. She was discharged on April 14, perfectly well.

CASE X. *Lacerated Wounds of Ear. Lead Sutures.*—John Foley, æt. 50, was brought to the hospital on Monday night, April 4. He had fallen down a flight of stairs, and struck his head against a marble table. Upon examination, we found that he had received a fracture (a simple fissure) in the mastoid portion of the right temporal bone, and several bad lacerated wounds of the right ear. The upper part of the ear was torn into three strips, attached only at the anterior edge. I brought the parts into their natural position, and retained them by lead sutures. The side of the head was then covered with lead-water and laudanum. The tissues were very much contused, and the man was an habitual drunkard.

6*th.* The wounds look very well, and in most places have united by primary adhesion; a little tongue of skin, however, which was almost torn off, looks as if it would slough.

On the fourth day an attack of meningitis began, which in a few days lost its violence, and gradually disappeared. But erysipelas, beginning with the ear, spread over his whole face to the other ear, and caused so much constitutional depression, with what he had already undergone, that he died April 19, while the local symptoms were abating.

The sutures were removed early, though I cannot name the day. The tongue of skin, mentioned above, sloughed. The wounds remained united, except at their outer corners, where they reopened during the attack of erysipelas.

CASE XI. *Amputation of Finger by Lateral Flaps. Lead Sutures. Lead Wire as a Drain.*—John Sheeren, æt. 27, came to the hospital April 7, with his finger so crushed by machinery as to need amputation at the metacarpo-phalangeal articulation. I performed the lateral flap operation, used three lead sutures; and twisting several pieces of lead wire together, placed it at the bottom of the wound, and brought the ends out at the upper and lower corners, so as to insure an exit for any matter that might form. I substituted this wire for the lint so often used because the latter absorbs so much pus as to become itself offensive before it is advisable to remove it.

16*th.* Took away the sutures, one of which had cut out. The edges had united, except at the upper and lower corners, where the lead wire, which I removed a day or two ago, had been placed. During the first four days he suffered a great deal of pain, and a slight discharge issued from the upper orifice, which continued until the 26th. He was discharged, well, April 28.

CASE XII. *Amputation of Toe. Lead Sutures.*—Charles Bradshaw, æt. 24, has had the inter-phalangeal joint of the great toe inflamed, with an external opening, for many weeks. It has resisted all means of cure.

April 9. Dr. Neill amputated through the articulation between the proximal and distal phalanges, by lateral flaps. I brought the flaps together by lead sutures. Union, except at the lower corner, took place before the fourth day. A slight discharge appeared daily at this point for nearly three weeks, when it closed.

CASE XIII. *Excision of Supernumerary Toes. Silver Sutures.*—Henry Gnade, æt. 5, has on each foot a double great toe, and a web be-

tween the second and third toes. His second and third fingers were also webbed, but were operated upon successfully when he was very young.

April 16. Dr. Neill excised the inner half of each great toe. On the right foot it was removed at the articulation between the proximal and distal phalanges. The distal phalanx alone was doubled. On the left foot, however, it was removed at the articulation with the metacarpus, as both the distal and proximal phalanges were doubled. Dr. Neill brought the edges of the wound together, and kept them in contact by the interrupted suture of silver wire. The sutures gradually cut the tissues, so that by the fourth day they were all loose, without union having occurred. The wounds granulated; the right toe was well in three weeks, and the left toe healed, except at one point, close to the metacarpo-phalangeal articulation, where there is still a slight discharge of pus.

CASE XIV. *Excision of Breast. Silver Sutures.*—Charlotte Johnson, æt. 57, had her right breast excised by Dr. Neill, April 23, for carcinoma. The incision was oblique, in the course of the fibres of the great pectoral muscle, and about six inches in length. Dr. Neill applied four silver sutures and adhesive strips to the wound.

26*th.* The posterior suture has torn out, and there the wound gapes to the extent of an inch. The rest of the wound looks well. Sutures still hold well, though each of them has cut a little.

29*th.* Removed the sutures. The anterior three-fourths of the wound have united, except where the ligatures passed out. The posterior part gapes widely.

May 21. The posterior fourth is now also almost closed by granulation. There is a slight discharge from the fistulous orifice left by the ligatures.

CASE XV. *Amputation of Finger. Lead Sutures.*—Bernard Branon, æt. 18, came to the hospital 4th mo. 24, after having his thumb cut off, through the proximal phalanx, by a hay-cutting machine. The flaps seemed good, but the bone was too long to be covered by them; so I made an incision on the side of the thumb, dissected up the flaps, and removed an additional piece of the bone. In this case the lead wire was passed through the flaps far from the edges, so as to insure their contact high up, and avoid any unnecessary strain on tissues that must have been more or less contused. I also made lead wire serve as a drain. The sutures were removed on the sixth day, when union was firm at the bottom of the wound. A narrow strip of skin came away. He was discharged, well, May 13.

CASE XVI. *Lacerated Wound of Nose. Lead Sutures.*—Thomas Sheeren, æt. 52, came to the hospital May 4. A man had bitten a piece out of his nose, and left a space as large as a five-cent piece in the right ala.

I cleansed the wound, drew the skin and muscles of the right side towards the median line, and retained them there by means of strips of gauze and collodion, and brought the edges into contact by two lead sutures, passing the wire double.

6*th.* The edges have remained in apposition. The parts are covered by a scab.

7*th.* The lower suture is loose; removed it. The wound has united, except just at the surface. Applied an additional strip of gauze.

10*th.* Removed the dressings. The upper suture had torn out. The sides of the wound remain together; the union below is firm throughout;

the surface gapes a little. Under strips of adhesive plaster and blue wash the wound contracted daily.

16*th*. Discharged, with merely a linear scar.

As will be noticed, the annealed iron wire was employed as a suture in but one case. In that it caused suppuration—apparently, at least. That it would not do so in every case, I am willing to believe, from its employment by Dr. Simpson, Mr. Spencer Wells, and others, in the radical cure of hydrocele. But I did not try it again, because it is more difficult and painful to introduce, cut, and withdraw than either silk, silver, or lead. The silver wire I have used in three cases, and seen used in others; and would fully agree with its advocates in laying aside the silk suture and employing it entirely, did I not believe that lead will answer our purposes still more efficiently and cheaply.

The superiority of the inorganic over the organic suture has, in effect, long been conceded, by its employment in certain difficult operations[1] (at the recommendation of Purmann, in wounds of the tongue; of Dieffenbach, in staphyloraphy; of Gosset, Sims, and Bozeman, in vesico-vaginal fistula; of Mettauer, in lacerations of the perineum and rectum), as well as by the length of time that it was allowed to remain. Gosset allowed his gold wire to remain twenty-one days, Sims[2] and Bozeman[3] always at least eight or nine days, and Mettauer[4] left his lead wire, in one case at least, for six weeks. Silk sutures, left in the tissues beyond forty-eight hours, become, in fact, setons. That metallic sutures are borne with perfect tolerance, any one will be willing to admit after his first experiment with either silver or lead wire. If they are drawn very tight, or if there is much contusion, they, of course, may tear out. In such cases, or where the parts are in constant motion, and indeed under many other circumstances, the clamps of Sims, or the buttons of Bozeman, or the old quilled suture, are very useful. The last I used a week ago, in a case in which I excised the proximal phalanx and part of the second for diseased bone; an operation which Dr. Dudley, of Kentucky,[5] Prof. Langenbeck, of Germany,[6] and Dr. Toland, of California,[7] recommend instead of amputation, as they state that the bone is reproduced. I made use of lead wire in place of the quill; and it has the advantage of being pliable, and capable of being moulded to suit any part. The sutures have now remained in for a little more than a week, and lie so easily as to seem to constitute almost a part of the finger.

[1] For a full history of metallic sutures, and their practical application, see *Med. Times and Gazette*, June, 1858; also *Medical News and Library* for Aug. and Sept. 1858, pp. 118 and 134. On the Use of Metallic Sutures and Ligatures in Surgical Wounds and Operations, by J. Y. Simpson, M. D.

[2] Silver Sutures in Surgery, by J. Marion Sims, M. D., New York, 1858.

[3] North American Medico-Chirurgical Review, 1857, vol. i. pp. 576, 885.

[4] American Journal of Medical Sciences for 1833, vol. xiii. p. 113.

[5] Transactions of the American Medical Association, vol. iii. p. 352.

[6] Guthrie's Commentaries on Surgery, London, 1853, p. 131.

[7] Reproductions of Bones and Joints, by H. H. Toland, M. D.—*Charleston Medical Journal*, November, 1857.

There is a choice, also, I think, between the inorganic sutures, the tissues seem to bear the pressure of different metals differently, and none so well as lead. But even if silver and lead are equally good in this respect, still lead is more easily cut, is more pliable, is cheaper, and at least becomes no blacker on exposure.

ART. III.—*Surgical Cases.* By R. A. KINLOCH, M. D., Surgeon of the Roper Hospital, Charleston, S. C.

CASE I. *Rare Form of Fracture of the Lower Jaw successfully treated by Suture of the Fragments.*—O'Ruke, aged 50, of feeble body, and with health much impaired by various excesses, was admitted into the hospital, partially intoxicated, on the 28th of June, 1858. An examination disclosed a compound fracture of the jaw, on the right side, just in front of the anterior border of the masseter muscle. All the molar teeth were absent, as a result of age, and the alveolar process of the bone about the seat of injury had undergone absorption. The soft parts covering the bone within the mouth were severely lacerated, and the fragments could be readily felt and seen through the wound. *The line of fracture divided the bone obliquely through its thickness, the obliquity being at the expense of the external plate of the small or posterior fragment, and of the internal plate of the large or anterior fragment.* The displacement was singular and marked. The small fragment projected inwards and slightly upwards into the cavity of the mouth; the large fragment rode the small one, having retreated downwards and backwards, and its extremity, which was somewhat pointed, could be felt externally under the integument. The patient's mouth remained partially open, and his chin had retreated so much backwards that the first glance suggested its disconnection from the lateral portions of the bone by a double fracture. There had been considerable hemorrhage from the wound of the soft parts, and from rupture, no doubt, of the inferior maxillary artery. A circumscribed portion of the lower lip, near the angle of the mouth, on the injured side, was destitute of sensibility. The patient's pulse was 120 per minute, small, and compressible; his nervous system was quite irritable, and he seemed upon the verge of delirium tremens; he could give no account of the cause of the fracture, as he was intoxicated at the time of the accident. The displacement was corrected, a compress applied under the chin and over the sides of the face, and secured by the figure of eight bandage of the head and jaw. (Barton's bandage, in which there are additional turns over the front of the chin, was contraindicated on account of the riding of the fragments.) It was believed that this apparatus could succeed only partially in preventing a redisplacement, but I concluded to be satisfied with this result for the time. The following treatment was prescribed: ℞.—Whiskey ℥jss; three times a day. ℞.—Tinct. opii ℥j; to be taken at bedtime. Diet, milk and beef-soup *ad libitum.*

July 1. It was evident that some more efficient contrivance for maintaining apposition of the fragments should be resorted to, as the displacement was as marked as on the first day. I accordingly put the fragments together, and secured the large or anterior one by connecting the upper and

lower canine teeth on each side with strong flax threads. (Thread was used as there was no wire at hand.) The small fragment could not be fixed in a similar manner, as the molar teeth were deficient. The compress and bandage were reapplied.

7*th*. Last contrivance does not appear satisfactory. Threads have yielded some, and bandage is deranged. Displacement, with riding, still marked. Extremities of fragments examined, and some partially detached splinters discovered, which promise soon to exfoliate. I now decided that suture of the fragments could alone preserve proper apposition; but as some exfoliation was certain, it seemed proper to temporize still longer. I substituted silver wires for the threads, connected the teeth as before, and, instead of the bandage, used a broad strip of adhesive plaster, carrying it under the chin, over the compress, and across the top of the head.

22*d*. Since the date of last note patient has been doing better. The large fragment has been kept in very good position. The adhesive plaster has now, however, yielded, and requires readjustment. Patient complains of "sharp point of bone cutting his gum," and also of the "wires paining and loosening his teeth." I removed the entire apparatus, and took away two detached spiculæ of bone. Silver wires were then twisted around the canine and the adjacent incisor teeth, both upper and lower, the extremities of each ligature passed through perforations in a leaden splint, and secured by twisting their ends together, so that the splint was held against the front of the teeth, and the upper and lower dental arches kept in contact. I hoped in this way to keep the large fragment more securely fixed than by the ordinary method of using the wire. The compress and adhesive strip were reapplied as before.

August 21. Up to this time the contrivance last described had been persisted in, and only removed on two occasions to take away spiculæ of bone detected and complained of by patient. A mouth-wash of Labarr. sol. chlor. sodæ and tinct. myrrh had been in daily use. A careful examination of the state of the parts was now made. The wound in the mouth had healed, and the soft parts consolidated about the seat of fracture; but, upon manipulation, the large fragment passed readily backwards and forwards over the small one; the peculiar deformity appears little changed. I again reapplied the compress and adhesive plaster, but determined to suture the fragments at the expiration of eight or ten days, should no more favourable result be promised.

30*th*. No improvement being manifest, I chloroformed the patient, and operated as follows: A semilunar incision, about two inches long, was made upon the side of the face, over the site of fracture, the middle of the incision reaching under the base of the jaw. The facial artery was necessarily divided in pursuing the dissection so as to expose the bone. With Brainard's smallest sized drill a perforation was made through each fragment, the drill being entered on the outside, close to the base of the bone, and about an eighth of an inch from the rough extremity of either fragment, and made to traverse the bony tissue and the mucous membrane covering it within the buccal cavity. During the boring the index finger of the left hand was kept within the mouth, to steady each fragment separately, and to protect the tongue from the point of the instrument as it entered the cavity. The drill was afterwards thrust between the fragments, and turned about, so as to lacerate slightly the intermediate connecting tissue. A stout silver wire was then passed through the perforations in the bone, from without inwards through the posterior fragment, and in the contrary direction through the anterior

one; the ends of the suture were tightly twisted together, so as to bring the fragments into secure apposition; and, lastly, the wound of the soft parts was closed by silver wire sutures, the extremities of the large suture that passed through the bone being brought out at one of the corners, and the compress and bandage once more adjusted. Patient went to bed and took an anodyne.

September 2. Sutures of soft parts removed; perfect union by first intention, except at corner where large wire passed out; compress and bandage reapplied.

26*th*. The suture of the bone had never given any trouble, and occasioned very little purulent discharge. Good consolidation is established. I removed the suture by untwisting it and pulling the ends carefully through each fragment. Compress and bandage still kept on.

October 7. All apparatus dispensed with; fistulous opening through which wire had passed healed; firm union of bone.

15*th*. Patient left hospital, with good use of his jaw, and with general health greatly improved. The sensibility of the integument about the angle of the mouth remained impaired.

Remarks.—The subject of fracture of the lower jaw has received proper attention from very few surgical writers. It is usually dismissed with a meagre consideration of simple vertical fractures of the body of the bone, and horizontal ones of the ramus and neck. The student is given to understand that there is no difficulty in the management of any of the varieties of fracture, if he will only mould a splint of leather, or of pasteboard, or of gutta-percha, to the chin, and keep the jaw up with a sling or a figure of eight bandage. When the oblique fracture of the body of the bone is alluded to, we receive generally no more information than Boyer gives when he says that it runs "downwards and backwards." Malgaigne is the only writer who has investigated the matter fully, and attached the requisite importance to the fracture running *obliquely through the thickness of the bone*. According to him, the case I have just reported must be considered an exceedingly exceptional variety of this particular form of oblique fracture. He remarks (*Traité des Fractures*, p. 381): "Je n'ai même trouvé que deux observations dans lesquelles le fragment postérior ait été vu dévié en dedans: l'une rapportée par Manoury, concernant une fracture produite par un coup de pistolet tiré dans la bouche; l'autre appartenant à M. Baudens, et sur laquelle nous aurons à revenir plus tard." Upon the relative position of the fragments must depend much of the difficulty in the management of the kind of fractures to which we are referring. When, as in my patient's case, the posterior fragment occupies the inner position, there is no obstacle to the action of the muscles attached to it, and it consequently goes inwards and upwards. Were the relation of parts reversed, the small fragment could not suffer such unfortunate displacement, for the anterior fragment would now prevent its passing towards the cavity of the mouth, and the upper dental arch would not permit of its tilting upwards. To correct displacement under these latter circumstances, and to preserve proper

apposition, we would simply have to manage the anterior fragment, and this we could do by ligating the upper and lower teeth, or by using some one of the many apparatuses provided with gutters for the teeth and means of counter-pressure under and outside of the jaw. Such are the apparatuses of Rutenick, of Bush, of Houselot, of Kluge, of Lonsdale, of M. Malgaigne (*Traité des Fractures*), of Dr. Sawyer, of California (*Am. Journ. of the Med. Sci.*, Jan., 1856). But in my patient's case it will be perceived that the absence of the molar teeth added another difficulty to those arising from the relative position of the fragments. This alone precluded the employment of valuable means suggested by the above named surgeons, and applicable, no doubt, to cases such as they detail. M. Malgaigne says: "Duverney avait songé au cas où la Mâchoire fracturée serait tout à fait édentée. Ce cas ne parait pas s'être encore présenté." The report of my case, then, furnishes the learned Frenchman with a *reality*, and I am pleased to say that it also enables him to realize the sanguine hope he so long ago expressed, that "la suture des fragments offriait une dernière ressource." The suturing of the fragments of a bone is not a recent procedure. Dr. Kearney Rodgers, of New York, as early as 1825, employed this means after a resection of the humerus for false joint, and Dr. Mott repeated the operation in 1831. (*N. Y. Med. and Surg. Journ.*, Oct., 1839.) In 1838 M. Flaubert, of Rouen, sutured the humerus for a recent compound fracture. (Malgaigne, *Traité des Fractures*, p. 276.) I know of no case except my own in which the lower jaw has been treated in this way. The *ligature* of the fragments, employed once, according to M. Malgaigne, by M. Baudens, resembles somewhat the treatment by suture, and perhaps should be preferably employed when applicable to the particular case. The ligature is passed through the soft parts by means of a needle, carried around the conjoined extremities of the fragments, and then securely knotted upon the teeth. In my case the line of fracture, traced from before backwards and from above downwards, was not sufficiently oblique to enable the ligature to act advantageously in securing apposition; and, moreover, the absence of the teeth seemed to me to contraindicate its employment. The ligature knotted upon the soft parts covering the alveolar process must occasion painful ulceration, soon become insecure, and prove a source of greater trouble than the perforating and suturing of the fragments.

CASE II. *Resection of the Knee-Joint for Disease of the Synovial Membrane and Cartilages, in a Patient fifty-eight years of age.*—Mrs. Ann Shae, a native of Ireland, aged 58 years, was admitted into the hospital on February 13, 1856, with disease of the right knee-joint, which she attributed to an injury received by jumping from an omnibus in New York many years ago. She was well known as having been long an inmate of our Almshouse Hospital, where she had been subjected to a variety of treatment, and where, finally, it had been several times proposed that she should submit to amputation through the thigh. She had always declined any operative interference. Upon inquiry, I found that she had been bedridden for two years,

and had constantly suffered from a painful tumefaction of the joint, with frequent exacerbations of more acute suffering, which usually subsided with the appearance of a purulent discharge through a fistulous opening which existed to the outer side of the popliteal space. The soft parts about the joint were much swollen, and chronically indurated and congested; the motions of flexion and extension were limited, and attended with acute pain; patient would not venture to put the foot of the diseased member to the ground. She was rather emaciated, but confessed the enjoyment of very good general health, except during the periods of increased tumefaction and pain of the joint, when she suffered from febrile excitement and much restlessness. Considering the age of the subject, the length of time she had suffered, and the inefficiency of all treatment to which she had been subjected by several good practitioners, I concluded that amputation would afford her the promptest and surest relief. I was satisfied of the existence of chronic disease of the synovial membrane and cartilages of the joint. The patient, however, absolutely refused any operative interference, but begged that I would treat her case, and give what relief was possible. I yielded to her solicitation, and, hoping even against hope, resorted from time to time to various plans of treatment, mainly of the alterative and tonic kind. The bichlor. hydr., mineral acids, hydriod. potass., bark, opium, different kinds of counter-irritation, the immovable apparatus, &c., were all brought into requisition, and to no purpose. Amputation continued to be rejected by the patient. I now urged the positive necessity for some kind of operative interference, concluding that resection of the joint was worth the trial, although the patient's age seemed almost to forbid the practice. Finally I secured her consent for the resection, and Prof. Geddings, the consulting surgeon of the hospital, having warmly advocated the procedure, the patient was chloroformed and subjected to the operation on the 24th of June. I adopted the procedure of Mr. Syme. Two semilunar incisions were started from a point, upon the outside of the joint, over the external lateral ligament, carried across the front of the articulation, one above and the other below the patella, and made to terminate over the internal lateral ligament at a point opposite to the one from whence they started. The capsule of the joint was thus freely opened, and the patella encircled. This bone was now found adherent to the condyles of the femur by bony anchylosis; this I had to break up by forcible efforts with my left hand before I could remove the bone.[1] The lateral and crucial ligaments were next divided, and the joint being freely flexed, I removed about an inch and a half of the femur and an eighth of an inch of the tibia. Much of the synovial membrane and the ligamentous tissue about the joint was in a state of pulpy degeneration, and I consequently cut away portions of these structures. The articular cartilages of the joint were deeply eroded, and at some points entirely deficient. No vessel bled sufficient to require a ligature. The extremities of the two bones came very well into apposition, so did also the lips of the wound. The wound was securely closed by suture and plaster. The limb was extended and placed upon a carved splint, with a foot-piece attached, and furnished with proper padding covered with oil-silk; a few strips of adhesive plaster served to secure the limb to the splint. The only difficulty encountered at first was the falling down of the tibia, and a slight tilting up of the

[1] I could never appreciate the advantages said by many surgeons to be gained by leaving the patella in cases of resection. In leaving it, we leave only so much additional osseous and fibrous structure predisposed to take on disease. Mr. Fergusson's experience leads him now to believe it best always to remove it.

femur, which prevented the accurate apposition of the extremities of the two bones. This I remedied by placing an additional pad, of proper thickness, transversely under the upper extremity of the tibia, and maintaining the lower end of the femur depressed by a broad strip of adhesive plaster carried around it and the splint. The patient being properly fixed in bed, two grains of opium were given, and cold irrigation of the limb ordered to be kept up; the opium to be repeated at bedtime. I shall omit the daily notes of the case, as these are not important, and the record would only prove tedious to the reader. Suffice it to say that for five or six days the patient was kept upon two grains of opium three times a day; cold water dressing was applied to the wound, and a plain nutritious diet allowed. To my astonishment, very little shock or febrile reaction ensued, and although the wound united only in part by the first intention, there never was any profuse suppuration. It was remarked by almost every one who visited the patient that she appeared not to have undergone any operation of a serious character.

June 24. Patient had taken a little hydr. mass and oil the day before, to relieve the bowels. This end had been accomplished. Wound looks well.

29*th.* The splint was removed, in order that the oil-silk and padding might be cleansed or changed. Care was taken to keep the limb quiet and the bones in apposition until the apparatus was readjusted. From this date nothing remarkable occurred except an occasional slight diarrhœa, accompanied with restlessness and inability to sleep. The liberal use of opium, and an occasional mild laxative, corrected this evil from time to time.

July 26. For several days the patient had complained of the pressure of the upper end of the splint near the ischiatic tuberosity. This had been partially obviated by stuffing in a little padding between the splint and the thigh. To-day, however, the complaint was greater; so I removed the splint, to examine the parts. An ugly sore was revealed at the point complained of. Upon examining the knee, I was gratified to discover that firm union had taken place between the osseous surfaces, and this almost solely by definitive or permanent callus. I could observe scarcely a trace of external provisional deposit. The thigh and leg seemed to be so entirely one, that I ventured to dispense with the splint, and put the member upon pillows; passing a few strips of bandage under these, and knotting the ends in front of the member, I was enabled to keep up the sides of the pillows, and thus secure a good lateral support for the thigh, leg, and foot. The wound of the soft parts had not yet healed; its inner and anterior portion presented an ugly weak granulating surface. This was dressed with the compound tincture of benzoin. To shorten the history of the case, let me say that the patient remained under my treatment in the hospital until the 17th of January, 1857, when she was discharged and took up her abode in the almshouse. During all the time that elapsed from the 26th of July to the date of the discharge her condition did not very materially change. She exercised a little upon crutches, but still the ulceration persisted; several abscesses had formed about the wound, and degenerated into sinuses; occasionally there would appear some increase of the inflammatory redness, with œdematous swelling of the leg and thigh. I subjected her to a variety of local treatment. Abscesses and sinuses were laid open; tincture of iodine was persistently injected into the fistulous openings; the efficacy of numerous lotions and ointments was fully tested; but all afforded very little benefit. Upon discharging the patient from the hospital, I concluded that the operation had been successful only in a very limited degree. Firm union of the

bones, it is true, had been obtained, the sufferer been freed from the painful irritation that used to follow the flexion and extension of the joint, and likewise released from absolute confinement to bed; but still her condition was such that I regretted that amputation had not been resorted to. Time, however, I am now glad to say, has reversed my decision and corrected my judgment.

Mrs. Shae was admitted into the medical ward of the hospital on the 20th of April of this year, to be treated for an attack of herpes of the trunk. I had the gratification of finding her almost rejuvenated, grossly fat, and, I may say, exuberant with health, if I except the eruptive affection, which was of little consequence. She was quite pleased to see me, and, I think, felt proud of her leg, which she acknowledged was worth more than many wooden ones. I examined the member with much curiosity. I found it quite as fleshy as the sound one, and two inches shorter upon measurement; the old ulceration had healed, and the cicatrix was firm; several of the old fistulæ, however, were still open, and, as she said, "discharged a very little, but gave no annoyance." She walked usually with a single crutch. At my request this was readily laid aside, and she walked with comparative ease about the ward. She had never resorted to any contrivance to make up for the defective length of the limb. I directed her to procure a proper shoe, with a sole of the necessary thickness; and with this, after some practice, I feel confident she must walk with comfort upon quite a useful member.

Remarks.—This case is interesting in several points of view. 1. I know of no case of resection of the knee practised upon so aged a subject. In Mr. Butcher's tables of these resections, recently published, including all cases operated upon previous to December, 1856, the most aged patient was forty-seven. 2. The very trivial constitutional disturbance that followed the operation in so old a subject, and the prompt ossific union that resulted, must go far to recommend the procedure, and to strengthen the opinion which regards the resection of the knee as a less hazardous operation than the amputation through the thigh. 3. The case illustrates the salutary changes which time may bring about in diseased conditions of the osseous and fibrous structures, and suggests to us the propriety of clinging to hope after some of the operations upon joints, rather than fly too hastily to amputation. 4. It is, I believe, the first case of resection of the knee-joint for disease practised in our country. Dr. Barton's operation above the joint, for straightening the knee, has been many times performed. Dr. Buck, of New York, in a case of bony anchylosis, with permanent flexion of the knee, cut a wedge-shaped piece of bone, including the patella, from the joint, and then forcibly fractured the posterior osseous lamina, lying in front of the popliteal vessels, in order to straighten the limb. Such an operation should not be confounded with resection of the joint in the ordinary sense. Since my own case, I have heard of one instance in which the resection of the knee has been practised, at the Pennsylvania Hospital, by Prof. Pancoast, of Philadelphia.

ART. IV.—*On the Efficacy of Cold Affusion in Narcotism.* By A. REEVES JACKSON, A.M., M.D., of Stroudsburg, Monroe Co., Pa.

UNDER the impression that the value of cold affusion, as a convenient and most effectual remedy in cases of narcotic poisoning is not generally so highly appreciated by the profession as it should be, I am induced to relate the following cases:—

Every practitioner who has had experience in such cases must have been painfully sensible of the impotency and impracticability of many of the ordinary means used in poisoning by narcotic substances. When the degree of narcotism is very great, emetics cannot be swallowed; the stomach-pump is frequently—in the country generally—not at hand; and galvanism, although a remedy of undoubted power, usually cannot be resorted to from want of the necessary apparatus. In view of these difficulties which surround the treatment of such cases, it is fortunate that there is a remedy always at hand, and one that in nearly every case in which recovery is possible by any means, is promptly effectual. That cold affusion to the head is a remedy entitled to this praise, and that it is one deserving much more attention than has generally been bestowed upon it, are facts which the following cases will, I think, fully substantiate.

CASE I. *Poisoning by Opium.*—On the 6th of March I was called in haste, by an Irish labourer who lived about one mile from this place, to see his son, a child eight months old. The father told me that the child was "clean dead," and "kilt entirely" when he left home, but was unable to give me any further information. On arriving at the place, I found the little patient in such a condition as almost to justify the father's expression.

Lying on the lap of its mother, its face was of a deathly pallid hue; the breathing slow, interrupted, gasping; the extremities were cold, and the skin covered with a clammy perspiration. The pulse at the wrist was barely perceptible in its feeble, thread-like beat.

I learned from the mother that she had been in the habit of administering to the child the preparation of opium known as *Godfrey's cordial* to make it sleep; and that having occasion to go to the village where she expected to be absent some length of time, she gave it, before starting, a *little more* than usual, in order that it might sleep until she returned. The quantity given on this occasion, she said, was about two teaspoonfuls, but as she made this admission with great reluctance, it was probably much greater. She was absent three hours, and when she returned the child was sleeping soundly, and she made no effort to arouse it until nearly an hour afterwards, when observing that it was unusually pale, she made an attempt to awaken it, but found it impossible to do so.

Five hours had now elapsed since the dose was administered. It was evident that the child was rapidly sinking, and that unless relief was quickly had, it would soon die. The stupor was so great that emetics could not be given—nothing could be swallowed. I had no stomach-pump at hand,

and there was no time to send for one; besides which, these means could not *rouse the patient,* which was to my mind the prime indication. I remembered that cold affusion to the head had been used successfully in some published instances, and I determined to give it a trial, although without the slightest expectation that it could be of any avail in this case.

Accordingly I ordered the father to procure a bucketful of cold water, and having the head of the child held over it, face downwards, filled a coffee-pot (they had no pitcher) and poured from it a steady stream upon the occiput in such a manner that the water ran off into the bucket beneath.

I had poured on two or three gallons in this manner, when suddenly I was startled by the child making a long, gasping inspiration, accompanied by a convulsive movement of the arms. My first impression was that it was dying. Raising its head, however, I saw that its eyes were open, and that its breathing was rather better than before the treatment was commenced. The eyes were almost immediately closed again, and, somewhat encouraged, I again poured on the water as before. In a very few minutes the child began to moan, and the breathing became more distinct; continuing the use of the remedy a few moments longer, it uttered a feeble cry.

I now desisted for a time, with the view of administering a solution of sulphate of zinc in warm mustard-water, but during the time occupied in preparing it the child relapsed into such a stupor that it was found impossible to rouse it by ordinary means sufficiently to enable it to swallow.

I again had recourse to the cold water, and with the same happy effect as before. In a very short time the child was once more roused to susceptibility, and cried out quite lustily. We now forced it to take a few doses of the emetic, which, aided by tickling the fauces, produced free emesis in half an hour. The matter vomited gave but little evidence, however, of the presence of the medicine.

Very little subsequent treatment was necessary. I ordered that small quantities of wine-whey should be given occasionally, and that frictions to the lower extremities be made with warm infusion of mustard, to obviate the resulting debility. In two or three days the child seemed to have regained its usual health.

CASE II. *Poisoning by Laudanum; Cold Affusion successfully employed.*—James H., aged 19, a blacksmith's apprentice, had been subject to neuralgia of the face, for the relief of which he used the camphorated tincture of opium, or paregoric elixir. About the middle of February, 1857, being attacked with the disease, and not having any of his customary remedy at the time, he procured from a neighbour a vial of laudanum, and being under the impression that the doses of the two articles were the same, he poured out a large tablespoonful and drank it. This occurred at 10 o'clock in the forenoon. In a few minutes he began to feel drowsy, and went to bed. About 4 o'clock P.M., one of the members of the family went up stairs for some purpose, and found him in what was supposed to be a dying condition. A messenger was immediately despatched for medical assistance, and the writer was summoned to see the case.

I reached the bedside of the patient about 5 o'clock—seven hours after he had taken the medicine—and learned the above particulars.

He was then under the full poisonous effects of opium. His surface was cold and clammy; his breathing irregular, slow, and stertorous—respirations eight in the minute; the pulse full, slow, and very irregular; the

pupils were tightly contracted and totally insensible to light; the countenance calm and pale.

I at once endeavoured to rouse him by speaking to him in a loud voice, by roughly shaking him, and by striking him smart blows with the open palm. These failing, we took him from the bed with the intention of moving him about the apartment between two assistants, but he was unable to bear the slightest amount of weight on his limbs. We then placed him on the bed again, and commenced beating the soles of his feet with wet towels. This also failed to elicit the least token of sensibility. I then dashed cold water in the face, hoping that I might rouse him sufficiently to enable him to swallow an emetic, although I thought it improbable that any of the poison still remained in the stomach. Although this caused him to start, and move his hands toward his face, yet as soon as the dashing of the water ceased, he at once became insensible again.

I now concluded to use cold affusion to the head; and having everything properly arranged, commenced pouring the water upon the head from a large pitcher held at a height of about eighteen inches. The effect appeared almost magical. Before the pitcher was emptied he opened his eyes, and evinced by his actions that the treatment was unpleasant. It was continued, however, and in a short time he was fully aroused. Nausea and vomiting now supervened, and the retching was so violent and long-continued that all remaining symptoms of drowsiness were banished. A cup of strong coffee finally checked this and completed the cure.

CASE III. *Poisoning by Belladonna treated by Cold Affusion.*—Mrs. H., the wife of a clergyman, had been suffering several days with severe neuralgia of the rectum, caused by the irritation of internal hæmorrhoids. I had been using a great variety of remedies, but as is usual in such cases, none produced more than temporary relief.

On the evening of May 7th, 1858, the pain was unusually intense, and I ordered a suppository containing one-third of a grain of sulph. morph. This gave almost entire relief from the pain, and she passed a tolerably comfortable night. Next morning, however, she awoke with headache, an intolerable itching, and nausea and vomiting, which continued throughout the day, and she positively refused to use opium in any form again. In the evening the pain returned as severely as before. I ordered the bowel to be cleansed by a laxative enema, to be followed by an injection consisting of a watery solution of extract of belladonna. I used the Shaker preparation, and laid out a portion containing about one grain, directing that it be dissolved in two ounces of water and thrown into the rectum and retained there.

About midnight I was hastily called to see the lady, and on my arrival found her surrounded by her friends who were greatly alarmed at her condition. She was lying on her back in bed, completely insensible. The face was of a bright red colour, and somewhat swollen; the breathing slow and quiet, entirely without stertor; pulse 130, small and hard. The eyelids were closed. On separating them the globe appeared injected and prominent; the pupils were widely dilated and directed forward with a fixed, vacant gaze. The patient appeared entirely unconscious, although she occasionally made an apparently painful attempt to speak. The muscles of the face, particularly about the mouth, moved convulsively. The arms were also slightly convulsed. The skin was warm and perspiring abundantly.

The husband informed me that inasmuch as the anodyne enema I had ordered had failed to allay the pain, he thought best to repeat it, and did so in *one hour* after giving the first. He said he had used a piece of the extract about the size of a *pea*, that he thought it was about the same size as the portion I had used. He further stated that in a short time after using it, the patient complained of feeling very warm, of some derangement of the head, and of an unquenchable dryness of the mouth and throat, with difficulty of swallowing. She also complained of confusion of vision, of giddiness, and of headache of a beating, throbbing character. These symptoms were followed by a light, good-natured delirium, a wandering loquacity, and extravagant, ridiculous actions, together with occasional nausea without vomiting, and ineffectual attempts to urinate.

Various means were used to rouse her without effect. Ammonia was cautiously applied to the nostrils; she was spoken to in a loud voice and roughly shaken, but "still she slept."

My first object was to remove any of the poison that might yet remain in the bowel; and for this purpose I ordered a large enema of thin gruel. After this had been administered I had preparations made for using the cold water. A large tub was placed on the floor near the side of the bed, and the patient being placed crosswise on the latter, with the head and shoulders projecting, and supported by an assistant, I commenced pouring a steady stream upon the back part of the head and neck. In a few minutes she opened her eyes, but reclosed them immediately. The face became gradually paler. In about five minutes she made an attempt to articulate, and pointed towards her mouth. Some water was put into her mouth, but she could not swallow it.

The use of the cold affusion was now suspended, as the patient appeared to be cold and shivering. She was placed in bed and lightly covered. In the course of ten or fifteen minutes her skin became hot, the face was flushed, and she again fell into a profound sleep. Once more the cold water was employed, and soon she again became conscious. A piece of ice was now placed in her mouth, and appeared to afford her much relief, although she could not articulate with sufficient distinctness to be understood.

The enema was now returned without any admixture of feces, but containing a considerable quantity of the belladonna, as was made evident both by the colour and odor of the discharge.

The patient, although drowsy for some hours, recovered without the use of any other remedy.

Her vision remained dim and confused about three weeks.

Remarks.—As far as I am aware, all the cases of narcotism in which cold affusion has been used heretofore, have been produced by opium or some of its preparations, and in such cases the efficacy of the remedy has been demonstrated beyond a doubt.

The case of Mrs. H., just related, shows, as far as a single case can show, that it is no less prompt where belladonna is the poisoning agent; a fact which derives additional importance from the circumstance that this medicine is now in such very general use.

Toxicologists agree in stating that where an overdose of belladonna has been taken, the stomach and intestines are peculiarly insensible to impressions; and, in fact, the whole nervous system is temporarily paralyzed.

This fact of course detracts very much from the amount of dependence to be placed on emetics and purgatives, even when they can be swallowed, and obviously enhances the value of a remedy so simple, so convenient, and which promises to be so useful as cold affusion to the head.

Evacuants, even admitting that they produce their full therapeutic action, can do little more than rid the system of that portion of the poisonous substance which is still unabsorbed, and although highly useful for this purpose, and not to be neglected, yet as remedies to relieve the *narcotism already produced*, and which forms the real source of danger, they are comparatively worthless.

Hence the necessity for a remedy which has the power to stimulate the nervous system to a sufficient degree of action to maintain the vital functions, while labouring under the prostrating influence of a narcotic poison.

Of all the means proposed for this purpose, cold water is the one most readily obtained, most easily and quickly applied, and on which most reliance may, I conceive, be placed.

Art. V.—*On the State of the Nutritive Functions during the Progress of Continued Fever.* By Bedford Brown, M. D., Yanceyville, Caswell Co., N. C.

According to present opinion, the absorption into the system of a certain morbid poison, is the prime cause of continued fever. Admitting this to be true, it is still questionable whether it is the sole and immediate cause of all of the pathological changes and phenomena which arise during the progress of that disease. On the absorption of this poison into the circulation, a deleterious impression is first made, we believe, on the blood. The essential nature of that impression is an impairment of the vital and nutritive properties of that fluid. This may be considered the primary stage of typhoid fever.

There are also changes of a secondary character, which are not only the immediate cause of some of the most important pathological phenomena of the disease, but in reality exert a controlling influence over the course and termination of it. The true nature of these changes is imperfect nutrition of the organized tissues.

The mental depression, the physical prostration, the remarkable decline of the organic functions, and the rapid emaciation, all afford abundant proof of the serious impairment which the nutritive and assimilative powers have sustained from the very beginning of the attack. Many of the leading symptoms or indications of morbid conditions, either of a functional or organic character, occurring in fever, are not peculiar to it. These identical symptoms are equally as common in the course of many other diseases.

The integrity of the intellectual and physical powers is now known to depend on certain regular and constant molecular changes which the tissues undergo in the assimilative process. These changes consist in a well-balanced process of renewal and destruction of structure. Now, when this balance is disturbed, in either the general assimilation or the nutrition of any particular organ, functional and organic derangement must be the consequence. Every action of an organ, whether of an animal or organic nature, causes that organ to sustain a loss of a certain amount of material by disintegration, and without a compensating renewal of matter it would be no longer capable of acting again, or would act imperfectly. Now many of the morbid phenomena of continued fever are in truth due, as an immediate cause, to the defective renewal of material to sustain the molecular condition of the different tissues. These phenomena consist of organic changes within the tissues, derangement or impairment of the various functional operations of the individual organs, and of the entire organism. To produce these effects, there is a double cause in operation in typhoid fever. First, on the absorption of the morbid poison, which generates the disease, the nutritive properties of the blood are primarily affected. They may be simply impaired to a certain extent, or so far destroyed as to suspend the nutritive process instantaneously and cause immediate death. Again, the digestive organs, being imperfectly nourished, fail to elaborate proper materials for assimilation. It is a remarkable fact that in all of those blood diseases, in which the nutritive operation is greatly impaired, the structure of the various organs and tissues are found in a softened condition after death. This cannot be accounted for otherwise, than by the supposition that proper material has not been regularly supplied for interstitial renovation.

To substantiate these opinions, it will be necessary to go into an investigation of the physical condition of the blood in fever, and of the influence exerted on the interstitial condition of the individual parts of the organism, by a deficient supply of nutritive matter for assimilation, together with the special symptoms arising from such a state in the form of deranged or suspended functions.

I believe that a correct understanding of this subject has a most important bearing on the management and treatment of the disease; so much so, that it is well worthy of the labour of a thorough investigation. Indeed, with our old notions of "Nervous Irritation," "Excitement," &c., and the false importance attached to them as chief elements in the pathology of fever, I consider, while entertaining such views, that we are totally unqualified to manage successfully a severe case of this disease.

Physical Condition of the Blood in Typhoid Fever.—According to analyses by the best authorities, the nutritive properties of the blood are diminished in continued fever, particularly the amount of fibrin. This diminution dates from the commencement, and increases not only as the

disease advances, but in proportion to the severity of attack. In the latter stages of severe cases, the blood becomes thin, poor, and greatly deficient in solid material. It is probably the fibrinous or plastic materials, of all others, are the most important for the support and nutrition of the human fabric. This diminution is not limited to quantity. The vital qualities are equally impaired. This is plainly manifest by the difficulty with which the blood sustains the vital action of resolving inflammations, and of healing wounds and ulcers. There is also a corresponding decrease in the quantity of salts in the blood of typhoid patients.

Effects of Innutrition on the Condition of the Nervous System in Fever.—In severe cases of continued fever, delirium, subsultus, vigilance, finally somnolence and coma, are always present. These symptoms are not peculiar to typhoid, nor even to fevers of a kindred nature, but are common to all diseases in which there is a deficiency in supply of properly elaborated materials, for the constant renovation of the nervous mass. In the simplest of all forms of innutrition, that of starvation, wherein all food is withheld from the system, these identical symptoms are developed to a prominent degree.

The brain has failed to receive its usual and proper quantity of albumen, phosphorus, fatty matter, &c., for the renewal of its structure, and consequently the functions proper to it become unsteady and irregular, and finally end in total cessation, when nutrition has been suspended.

The physiological principle that every action of an organ causes it to sustain a loss of a certain amount of substance by disintegration, and without a corresponding or compensating renewal of matter, the same organ would no longer be capable of acting again, is admirably illustrated in this case.

In the early stages of fever, when the nutritive process is but slightly impaired, the functions of the brain are not as vigorous as in health, the mind is vacillating, and the will is unsteady and not as capable of directing as usual. There is an unusual gloom and depression hovering over it, or there is an indifference to consequences and a disposition to surrender. Nor will the muscular powers respond to the mandates of the will as common. Here is plainly a want of nervous vigour and strength, induced by a slight impairment of interstitial nutrition. I have no doubt that the nutritive operation begins to decline as soon as the morbid poison of fever is absorbed. In proportion as this operation is interfered with, the course of the disease will be rapid and violent. About the second or third week of fever, when the nourishing properties of the blood are becoming seriously damaged, and the integral renewal of nervous matter is partially suspended; then it is, that what was early in the attack but slight falterings of the nervous energies, become marked failures of organic action, which gradually merge into delirium, subsultus, then somnolence, and finally coma, telling the truth too plainly that the functions of the brain are abolished, because

there is no longer material in the blood for the renovation of tissue, and the supply of waste which the organ has sustained.

The peculiar nervous symptoms of delirium tremens I consider a good example of the influence exerted on the functions of the brain, from impaired nutrition and waste of nervous matter. That the nutritive properties of the blood and nutrition of the tissues suffer greatly from constant imbibition of alcohol is not doubted.

After exhausting hemorrhages from any cause, the supervention of nervous symptoms is an invariable consequence. Here we witness violent delirium, convulsions, muscæ volitantes, and coma, originating from a cause that cannot be mistaken, which consists absolutely in a non-supply of nutritive material for the sustenance of the nervous system. Whilst the defect in this case is due to quantity of material—in the case of continued fever the quality is equally at fault. The effects, organically and functionally considered, are very much the same. The human system can be starved to death as readily by altering the quality of the blood, as by reducing the quantity.

What is termed "False Hydrocephalus" affords another instance of extreme derangement of the nervous system from want of sustenance. In this peculiar disease, all of the nervous symptoms are present that usually attend acute inflammation of the brain. Yet after death not a trace of organic lesion can be discovered; to the contrary, the brain is found pale, wasted, and softer than natural. During the protracted progress of chronic indigestion, a great variety of nervous symptoms arise, though differing somewhat from the foregoing. The moral and mental vacillation of the dyspeptic: his variable temper—his whims and caprices—the extreme excitability of his nervous system—his tendency to melancholy, and finally to confirmed lunacy, are all substantial evidences that his brain is suffering for the want of a properly elaborated supply of nutritive matter. A large portion of the ingesta taken into the stomach in dyspepsia, when not rejected by that organ, or passed through the intestines in an unaltered form, is so improperly reduced and converted, that it is rendered unfit for purposes of assimilation. Hence this material, instead of being appropriated for the renovation of tissue, after floating about in the circulation, is eliminated as waste matter, much of it from the kidneys in the form of lithates, phosphates, &c.

I have deemed it necessary to produce these cases as evidences not simply confirmatory of the fact that symptoms of nervous derangement are a common sequence of imperfect nutrition, but to establish the equally important fact that such symptoms are not confined to continued fever, but are equally as frequent in other diseases in which defective nutrition is a prominent element. Again, I wish to combat the idea that nervous derangement is attributable, in fever, merely to "irritation" or "sympathy," both vague and indefinite terms. Neither can the nervous derangement of fever be the

immediate result simply of the impression of the specific cause of that disease, for such derangement rarely occurs until that stage when the general nutrition is beginning to fail. At the same time such symptoms are equally as common in diseases in which the morbid poison of fever is entirely absent. The correct comprehension of this subject has a most important practical bearing.

Condition of the Circulatory Organs in Typhoid Fever.—The heart, of any single organ, has one of the most difficult parts to sustain, not only in fever, but in all other diseases. On it devolves the duty of sending the vital fluid to the remotest parts of the body, and thence receiving it in return, discharging it into the pulmonic system, to be subjected to atmospheric action. The great fatality of continued fever is not at all astonishing when we consider, in connection with these important and necessary duties, what a vast influence any impairment or withdrawal of the adequate amount of nutritive materials has on the heart's action. A decline in the heart's action in fever assumes an importance paramount to all other considerations. If the principle that every time an organ is brought into action it sustains a certain loss of material by oxidation holds good in other instances, it is especially so in regard to the heart in typhoid fever. That organ, so long as life remains, must continue in operation unceasingly, in this particular differing from all other organs. When we know that, in common with other parts, in fever it fails to receive the due proportion of nutritive material for the renovation of its tissue, and, at the same time, that this tissue is constantly undergoing a disintegrating process and waste caused by rapid and incessant action, the powers of the organ to maintain the all-important duties devolving on it are truly wonderful. Doubtless the failure of the heart's action in asthenic cases is due to the fact that there is not a sufficient renewal of material to supply the waste of cardiac tissue and sustain its vital action.

In some of the most malignant cases of fever that I have ever witnessed the heart's action was extremely feeble and slow. No amount of artificial stimuli could arouse it to increased action. These cases terminated more rapidly in death than those in which the circulation was greatly increased. Indeed, the explanation of this seems to me to be the utter failure of the nutrition of the substance of the heart. The disintegration and waste of cardiac substance caused by a pulsation of a hundred and forty or more to the minute must draw heavily on the powers of the heart, and, without a compensating renewal of material, such increased action must of necessity result in softening of the tissue of the organ, and exhaustion of its powers. In my opinion, herein consists one of the chief dangers to be apprehended from a rapid circulation in fever. Hence the importance of controlling the circulation. Softening of the cardiac tissue is frequently found after death from continued fever, and is probably more frequent than is even supposed. This is a mere fragment of a great constitutional change that is ever in

progress in fever, and a certain consequence of imperfect assimilation from impure blood. A loss of affinity between the fluid and solids in fever is the probable cause of most of the intercurrent inflammations occurring during the progress of the disease. The healthy circulation through the capillary system is no doubt materially influenced, and even regulated, by the condition of the nutritive process. When the integrity of that process has been impaired, a disturbance of the capillary circulation will necessarily follow. Hence the occasional occurrence of congestions and subacute inflammations in fever.

Influence that Hemorrhage exerts on the Progress of Fever.—All practical physicians are aware of the danger of hemorrhage as a complication of continued fever, and hail it with dread and apprehension. I believe it can be truly said that there are but few diseases in which the body suffers more from loss of blood than in this. So strictly is this the fact, that but few physicians will resort to bleeding, even in inflammatory complications. Now, when the nutritive properties of the blood are so materially diminished as they certainly are in fever, it is not surprising that the occurrence of hemorrhage should exert such a baneful influence over the progress of the attack. There is another difficulty, also. In fever the capacity of the digestive and assimilative organs for the elaboration and formation of new blood is imperfect. I have in more than one instance witnessed what previously was a very mild attack of fever converted into a most malignant one by a comparatively moderate amount of hemorrhage. To bring forward additional testimony for the purpose of sustaining my opinion, that, namely, many of the phenomena and symptoms of fever are due, as an immediate cause, to a defective amount of nutritive material in the circulation, and an imperfect state of the nutritive process, to cite the agency of hemorrhage in modifying an attack of fever is almost sufficient of itself. One instance we will select as an example. An attack of fever that has observed a comparatively mild and moderate character up to the supervention of a considerable hemorrhage. Suddenly the entire aspect of the disease changes; new features appear, that were absent before; a total perversion of the animal and physical powers takes place; there is delirium, subsultus, and coma, a very rapid and feeble action of the heart, a sudden decline of animal heat, and, in fact, all the signs of the exhaustion of the fountains of nutrition.

The Accumulation and Escape of Effete Matter in Fevers.—The degree of diarrhœa is a very good criterion of the amount of effete matter accumulating in the circulation. When the quantity of nutritive matter in the blood is reduced so far below the standard of health, the disintegration of tissue and accumulation of effete matter must be very great. This effete matter doubtless escapes from the system principally through the intestines and skin in fever. That the diarrhœa of fever is chiefly due to ulceration of intestinal glands I cannot believe any more than that diarrhœa is the principal element in cholera. There is something more than the elimination of the fluid portions of the blood. There is a great constitutional revolu-

tion at work in both instances, in which the molecular structure is rapidly being broken down, and the cell formation and growth is arrested. How can the excessive emaciation and waste of the textures be accounted for, except by the fact that some agent having been introduced, has impaired, or even arrested, the nutrition of the body, by acting on the vitality of the blood? The balance between the formation and disintegration of structure is lost in favour of the latter process. The *débris* of broken tissue must find an outlet through some emunctory. No, the causes of typhoid and choleraic diarrhœa are further back in the depths of the system than any change confined to the intestinal tube could produce. The accumulation of that substance known as "typhoid deposit" in the intestinal and other glands is, I believe, nothing more than a portion of the general mass of effete matter in the system, and which is finding an outlet in this manner. But then the copious diarrhœa of fever is not to be encouraged from a false belief that all the effete matter in the circulation is useless, and should be expelled as soon as possible. To the contrary, it is a well-established principle of physiology that much of this matter is not only not useless, but, when retained, is constantly being reassimilated into the solid structures.

Sloughing and Ulceration during Continued Fever.—When the healthy nutrition either of a portion or of the entire body has been materially interrupted, the disintegrative absorption of the solids becomes so rapid as to assume the form, in particular localities, of sloughing and ulceration. This state of things is particularly liable to occur in parts in which the circulation is rendered more feeble than natural, either from mechanical or physiological causes. I regard what is termed the bed-sore of fever as a true type of the vital condition of the system, and an accurate representation in miniature of the state of the great nutritive operations going on in the constitution. By it we are enabled to observe, on a small scale, these operations in progress, and to learn the important fact that the solid tissues are breaking down and wasting away for the want of a healthy renewal, and that the process of disintegration is in the ascendency. The absorption, in protracted cases of fever, of the osseous unions of old fractures, and of the cicatrices and wounds of ulcers long healed up, afford another instance of the imperfect state of the nutritive functions and the rapid destruction of tissue.

ART. VI.—*The Pathological Relations of Cancer and Tubercle.* By JOHN H. PACKARD, M. D., of Philadelphia. (Read before the Academy of Natural Sciences, Biological Department, May 2d, 1859. Recommended for publication, May 31st, 1859.)

THE mutual relations of cancer and tubercle, and their position in reference to other adventitious formations, taking into the account not merely

the information afforded by minute anatomy, but also that derived from clinical observation, seem at the present time to demand investigation. Such an inquiry, to exhaust the subject, would far transcend the limits to which I must here confine myself; and hence, all that will be attempted will be to give a general survey of the merits of the question, which may, however, prove not unprofitable.

Experience has shown that, in order to accomplish anything in this important branch of pathology, a diligent use of every available method of investigation is requisite. To endeavour to work so vast a mine, either with the microscope alone, or entirely without its aid, would at the present day be unphilosophical, if not actually absurd.

Now, if there be such a property as malignancy predicable of any morbid deposits, *cancer* and *tubercle* are those of which it is most undoubtedly so. And this property, being supposed, can be explained in either one of several ways.

Thus, a new element may be imagined, formed in, or entering into the nutritive material supplied to the whole organism, and separated by means of a specific growth, which must, in this view, be regarded as an extempore gland.

Or, the new growth may be looked upon as the starting-point, from which the mischief radiates throughout the system, just as a poison placed upon the surface might enter the circulation.

Or, the nutritive material may be considered as merely undergoing deterioration, by virtue of which it expends itself in the production of useless and irregularly organized forms.

Or, an abnormal element may be supposed to enter, or to be formed in the blood, determining an excessive and irregular evolution of textures, not essentially abnormal.

The facts which are now to be brought forward and compared, may perhaps enable us to appreciate better, the respective values of these theories, or at least may be suggestive to those who are aiming at the solution of the problem upon which they bear. In order to arrange the facts at command most conveniently, they will be presented under the usual heads of etiology, symptoms, morbid anatomy, &c.

I. The *causes* of cancer and tubercle, like those of many other forms of disease, are oftentimes extremely obscure, and observers are apt to be betrayed into serious inaccuracies of thought and expression upon this subject. Some mere coincidence is not unfrequently assumed as the prime cause, it may be to the entire exclusion of the real, but less obvious agency. Now the conditions causing or favoring the inception or development of tuberculous disease, are in some respects similar to, in others widely different from those bearing the same relation to cancer.

Hereditary predisposition is an influence to which both cancer and tubercle are often ascribed. But this phrase is vague, and may therefore

become a source of misconception. The embryo does not probably derive from either parent any superadded element of disease; but there is either an error or a deficiency in the formative force with which it is *ab initio* endowed. Nor can it ever be asserted that the offspring of parents, in one or both of whom tubercle or cancer exists, is absolutely free from the same view of constitution. Circumstances may so influence the successive generations derived from a tuberculous or cancerous pair, as to hold the disease entirely in abeyance, perhaps to do away with it altogether; and, since it can never be proved that this has not occurred in any case, some colour is given to the idea that hereditary transmission is the sole source of these disorders. In other words, cancer and tubercle are either inherent in all the descendants of parents so affected, or they may at any time be spontaneously generated under incidental influences. But, if the former view be accepted, then another dilemma is unavoidable: either these two forms of disease are identical, or they must at some past period have arisen separately; unless, indeed, upon the supposition of a plurality of races, we suppose also a corresponding plurality of diseases, races and diseases becoming alike mixed at a later period. Whatever ground may be assumed upon the preceding points, tubercle much more commonly seems to be formed as a consequence of similar disease in the parent than does cancer.

Either of these diseases, when apparently inherited, may put on a different form in the child from that which it bore in the father or mother. Thus, if the latter had pulmonary tuberculosis, the offspring may have tuberculous marasmus; if scirrhus of the breast, the child may have encephaloid disease of the eye. Tuberculous disease of the lungs, and cancerous disease of the alimentary canal, are more apt to reappear unchanged in the offspring than any other special forms; but to explain this circumstance would not be difficult.

It must, however, be observed that hereditary transmission is not, strictly speaking, a *cause* either of cancer or of tubercle, and its influence is so very apt, for many reasons, to be over-estimated, or even to be altogether imaginary, that it is not safe to argue too positively from it.[1]

Age has less to do with the development of tubercle than with that of cancer; at least, the distribution of the former is more equable among persons at all periods of life. Very many cases of tuberculous disease are met with in those who have not yet arrived at adult age; but this cannot be said of cancer. According to the researches of Lebert, scrofulous affections attain their maximum of frequency between 15 and 20 years, tuberculous, at about the 30th year;[2] while the average for all forms of cancer

[1] See an interesting paper upon this subject by Mr. Paget, originally published in the Med. Times and Gazette, Aug. 22, 1857, and quoted in the Am. Journal for Oct. 1857.

[2] Traité Pratique des Maladies Scrofuleuses et Tuberculeuses, p. 58.

places their maximum at the 50th.[1] Hence, taking into consideration the fact of a majority of every population being below the age of 30, and assuming the very close alliance, if not the identity of scrofula and tuberculosis, we have a result which agrees with general observation, viz., that tuberculous disease is very much more frequent than cancerous. There is, however, one point to be borne in mind in estimating these conclusions, and that is that while they may be correct as regards France, or European countries generally, they may not answer for other parts of the world. Accurate statistics would perhaps show the proportionate numbers and ages to be precisely the same in the United States; but, until these are obtained, any assumption to that effect must be carefully qualified.

Sex has a very marked influence in regard to cancer, the number of women affected being said by Lebert to exceed by more than one-third that of the men. It is otherwise, according to the same author, with tuberculosis, the sexes being much more nearly upon an equality; but here the proportion is known to vary in different countries, and the different forms of the disease, as well as the parts affected, are found to give quite diverse results. Some interest would attach to an accurate investigation into the relative proportion of single and married women among the victims both of cancer and of tubercle.

(As regards the circumstances of *age* and *sex*, in relation to cancer and tubercle respectively, I subjoin the following extracts from reports made to the Legislature of Massachusetts; considering them as reliable as any statistics can be which depend for their accuracy upon that of numerous individuals, and more so than any others to which I can at present obtain access.

There were registered in that State, in 1856—

DEATHS FROM—		Under 5 years.	5 to 10.	10 to 15.	15 to 20.	20 to 30.	30 to 40.	40 to 50.	50 to 60.	60 to 70.	70 to 80.	Over 80.	Unknown.
Cancer, 217.													
Males	72	4	1	...	...	3	1	10	12	18	15	7	1
Females	145	7	2	...	1	1	10	28	35	32	15	14	...
Consumption, 4701.													
Males	1943	205	18	20	132	458	365	244	191	168	103	29	10
Females	2754	211	20	66	266	792	518	300	206	169	148	35	23
Unknown	4	2	...	...	...	...	...	...	1	...	...	...	1
Scrofula, 95.													
Males	51	23	5	...	1	5	3	3	6	1	4	...	...
Females	44	21	2	2	4	3	2	5	...	2	1	2	...
Tabes mesenterica, 205.													
Males	100	89	1	...	...	1	...	...	1	5	1	...	2
Females	105	87	2	...	...	3	5	2	1	3	...	...	2

[1] Traité Pratique des Mal. Cancéreuses et des Affections Curables Confondues avec le Cancer, p. 138.

The corresponding register for 1857 shows—

DEATHS FROM—		Under 5 years.	5 to 10.	10 to 15.	15 to 20.	20 to 30.	30 to 40.	40 to 50.	50 to 60.	60 to 70.	70 to 80.	Over 80.	Unknown.
Cancer, 242.													
Males . . .	78	5	2	...	...	4	3	4	12	25	17	5	1
Females . . .	164	...	1	...	...	7	25	31	35	29	22	12	2
Consumption, 4625.													
Males . . .	2030	189	32	20	131	455	355	277	224	206	116	15	10
Females . . .	2593	152	49	53	252	713	452	301	216	197	153	43	12
Unknown . . .	2	1	...	...	...	...	...	...	...	...	..	...	1
Scrofula, 104.													
Males . . .	64	31	5	10	3	3	2	3	1	2	3	1	...
Females . . .	40	16	2	1	2	2	3	2	2	3	6	...	1
Tabes mesenterica, 224.													
Males . . .	111	91	3	1	...	3	3	3	2	3	2	...	...
Females . . .	111	97	3	...	...	5	3	2	1	...	...	...	...
Unknown . . .	2	2	...	...	...	...	...	...	...	...	...	...	...

It is not improbable that cases of cancerous and tuberculous disease are included also under the following heads: Cephalitis, diarrhœa, hydrocephalus, disease of lungs, disease of spine, tumours, and disease of uterus. But I have thought it best to omit all these, since their bearing upon the present subject is not sufficiently definite to warrant any conclusions from them.)

Complexion, or rather the peculiarity of constitution denoted by it, possesses a high degree of significance in connection with the present subject. Tuberculosis is well known to be of very common occurrence in negroes and mulattoes, while they are seldom affected with cancerous disease. And although among scrofulous or tuberculous white people, there are many with fair and many with dark complexions, it would not be easy to mistake the peculiar signs of this diathesis.

Residence in the city or country would be *à priori* expected to exert a different influence from that which it really does. The more favourable hygienic circumstances of those who live in the country do not prevent their suffering from tuberculous disease in nearly the same proportion as do the inhabitants of towns,[1] while cancer seems actually to find fewer victims among the latter than among the former.[2] And although these facts are hitherto unexplained, they are so well established as to demand consideration.

Occupation has something to do with the development of both tubercle and cancer, but its influence can only be precisely ascertained by means of data, which it is difficult to procure. It is a matter of common observa-

[1] Lebert, Maladies Scroful., etc., p. 72.

[2] Walshe on the Nature and Treatment of Cancer, p. 162. Lebert, Mal. Cancéreuses, etc., p. 131.

tion that persons of sedentary habits are liable to tuberculous disease; which, with the fact before mentioned, that the rural population afford a majority of cases of cancer, would seem to show a material difference in the circumstances favouring these respective morbid conditions. Such a conclusion cannot, however, be looked upon as positive, for this reason, if for no other: in the city a larger proportion of deaths occur below the age at which cancer mostly prevails, than in the country. Moreover, as Lebert remarks, scrofula and tubercle are, as a general rule, developed before any occupation has been long pursued.

Depressing causes, such as a temperature habitually low, insufficient nutriment, and mental emotions, have long been regarded as promotive of scrofulous and tuberculous disease; and are by some writers assigned a like relation to cancer. The comparative degree of influence of different climates upon the formation of tubercle is said by Lebert[1] to be very nearly equal; but it must not be forgotten that many countries in which a high temperature prevails, are in a great degree populated by races predisposed to this variety of disease. Cancer, although apparently affected more immediately by varieties of temperature, is not so in reality; it seems, as Dr. Walshe[2] remarks, to bear a direct ratio to the degree of civilization and social advancement. This latter idea must, however, be somewhat qualified, when we recollect the large number of cases of cancer afforded by the country as compared with the city.

Insufficiency of nutriment, although doubtless not without its influence in the aggravation of the symptoms, whether of tuberculosis or cancer, is not a demonstrable cause of either.

Mental depression has always held a prominent place in the list of causes now under discussion, but its influence cannot be proved except in a minority of cases. Without entering upon the trite and obscure subject of the mutual reactions of mind and body, and with all deference to the opinions of many eminent authors, I may remark that there must be supposed a prior tendency to the disease, the mental state being a mere auxiliary agent. Dr. Walshe alludes to cases observed by him, "in which the connection" between mental affliction and cancerous disease "appeared so clear and decisive, that to question its reality would have seemed a struggle against reason."[3] He says immediately afterwards, however: "But the extent to which this influence works practically has doubtless been over-estimated." And the number of cases constantly observed, both of tuberculous and cancerous disease, in persons entirely free from mental depression, with the frequency of mental depression neither connected with nor followed by either of those diseases, must surely weaken the claims of this condition to rank among their efficient causes.

Thus far we have been concerned with predispositions; it may be doubted

[1] Op. cit., pp. 78 and 93. [2] Op. cit., p. 61. [3] Op. cit., p. 155.

whether the exciting causes can be determined with greater accuracy than these, or with less. Is there such a thing as an immediate cause of cancer or tubercle, no favouring condition having existed previously? An answer to this question may be obtained by examining *seriatim* the circumstances usually so considered.

Depressing causes sometimes seem to bring on tubercular disease, as, for instance, in a person who has sustained severe affliction or endured very great privation, and who soon afterwards, as the saying is, "falls into a decline." The same may be said of antecedent diseases, such as enteric fever, or intra-thoracic inflammation. But there is always ground for suspicion in these cases that the mischief had been going on in the economy for a longer or shorter time; a suspicion strengthened by the fact that in so many instances the same agencies are quite as powerfully exerted without inducing the same results. In regard to cancer, the evidence is even less clear in favour of their efficiency, and we can only say that they appear to be not without influence.

External violence is often assigned as the cause of cancerous growths. It seems sometimes to bear the same relation also to the formation of tubercle; thus tuberculous disease of bone, of the testicle, or of a joint, is quite commonly attributed to it. I have reported a case to the Pathological Society,[1] in which deposits of this nature in the cerebrum and cerebellum of a boy six years old began to manifest themselves almost immediately after he had sustained a severe blow on the back of the head. But in this boy, as in almost every other case of tuberculous or cancerous disease, there was evidence of previous constitutional infirmity, aside from the fact that so many blows and contusions are unproductive of any such results.

The idea that tubercle and cancer propagate themselves by *contagion*, although formerly defended, is untenable.

From the preceding survey of the conditions favouring or inducing the development of cancer and tubercle, it may be seen that while the influence exerted respectively by inheritance, sex, occupation, and the various sources of persistent depression of the vital forces, seems to correspond somewhat closely in the two diseases, this cannot be said of the other circumstances alluded to.

Thus a remarkable discrepancy exists between the earlier and later periods of life in regard to the relative frequency in them of these two diseases, either of which, however, may occur at any age; and this must surely be allowed to possess some significance.

So also the very marked tendency, or rather perhaps *aptitude*, of the African race for tuberculosis, and their comparative exemption from cancerous affections, must be capable of some interpretation.

[1] North Am. Med.-Chir. Review, Jan., 1859, p. 91.

And the facts connected with the influence of occupation, and of city and country life, as well as with that of external causes, seem to combine with the foregoing to indicate that some essential difference exists between these two forms of disease.

Now, carrying the investigation further in regard to this branch of our inquiry—etiology—is there any real distinction to be drawn between the causes of cancer and of tubercle and those of other morbid deposits? It has already been remarked that the tracing up of known facts to their true causes is very apt to be a matter of extreme difficulty. And in very many instances nature seems to gratify the wildest caprice in regard to the matter in question. Fibrous tissue, bone, cartilage, may be thrown out in the most irregular and purposeless manner. But in the case of tubercle and cancer the clearest evidence is presented of a vice of constitution, of which the local deposit is but a minor consequence. That this abnormity is not identical in both these forms of disease would be inferred from the considerations already brought forward in relation to the conditions under which it manifests itself in each; and in proceeding to examine the clinical differences between tubercle and cancer, and between these and other affections, the specific character which each bears will, I think, be rendered still further evident.

II. Under the head of *symptoms* may be included all the phenomena which fall under the notice of the clinical observer—such as the seat of disease, mode of attack, amount and kind of pain, duration, mode of termination, &c.

In regard to the *seat of disease* remarkable differences present themselves between cancer and tubercle, and between these and other forms of morbid deposit; and these differences are essentially modified by the circumstances of *age* and *sex*.

Here, however, it must be noted that the statements of authors are to be received somewhat conditionally. Entire reliance cannot be placed upon the accuracy of statistics derived from any and every source. Sound pathological views can be arrived at only by the most rigid scrutiny of facts, especially where diagnosis is involved, this being the point concerning which errors are so commonly and so fatally committed.

To the best of our present knowledge, certain parts are altogether exempt from certain morbid deposits, while they are the chosen seats of others. Again, some organs seem to constitute a sort of neutral ground, being occupied now by one form of disease, and now by another; and of this group some are exempt at one time of life and not at another, or in one sex and not in the other, while some are alike exposed at all times and under all circumstances. The mammary gland and uterus, so well known as extremely liable to cancer, may be pronounced absolutely without the range of tubercle. In the brain either cancerous or tuberculous deposits may occur, and so also in the lungs, alimentary apparatus, and genito-

urinary organs. Hence it may be stated, in general terms, that the range of tuberculous disease in the economy is much less extensive than that of cancer, notwithstanding the much greater frequency of its occurrence.

But here we must note the influence of age and sex. In children the mammary gland and uterus are, for obvious reasons, free from liability to cancer, while the eye and brain are its most usual seats. But in male children the testicle is found to be thus diseased quite as frequently; and it would be an inquiry of some interest whether its analogue in the female—the ovary—shares in this disposition. Tubercle, often a primary disease of the alimentary apparatus in the child, is seldom so in the adult. Considering the relative frequency of tuberculous and cancerous affections, the brain of the child, or at least its membranes, may perhaps be equally subject to either; but in the adult brain cancerous deposits are of much more common occurrence.

As regards the genito-urinary apparatus, the influence of sex is quite marked. In the female the urinary organs are exempt from cancer in a much greater degree than in the male, while the uterus is very subject to it. In the male the genital organs and the urinary are much more nearly on a par in this respect. Even here, however, we find that the former are decidedly preferred by the disease.

The very great rarity of cancer as a primary deposit in the lungs, and the extreme frequency of tubercle, are so well known that they need not here be enlarged upon.

Now there are some aspects of the circumstances just mentioned in which it would seem as if cancer and tubercle might be only different manifestations of one and the same morbid element; thus we might be told that the difference between cancer of the female breast and tubercle of the testis was dependent wholly upon incidental influences; that in cancer of the lung and tuberculosis of the mesenteric glands the same agent was at work, but under different auspices. If, however, these diseases are not by any means thus limited—if, in individuals otherwise placed upon the same level, each form of disorder has its distinguishing features, such a supposition loses its plausibility. It now becomes necessary, if possible, to show that this is so, that the phenomena presented in the one case are essentially diverse from those in the other.

Cancer, as is well known, is deposited in masses of very variable size, generally beginning with a single one, very small, which gradually enlarges and spreads; around this others sometimes seem as it were to radiate, like offshoots. Tuberculous matter appears, on the contrary, to stud the substance of parenchymatous organs with minute masses; it has not the same disposition to usurp the place of the normal structures that cancer has, but makes its inroads by virtue of a sort of sufferance. Such is the course of things in the lung; in the alimentary canal, while cancer always gives rise to a stricture by inclosing the tube with a firm and more or less narrow

ring, tubercle seems rather to undergo a process of excretion, being deposited upon and thrown off from the mucous surface. Nor do we find, either in the mesenteric glands, or in those of the lymphatics elsewhere, that tubercle does more than fill up these organs; but cancer infiltrates and surrounds them, so that their outlines are but dimly traceable in the hard, irregularly nodulated mass which results. In the brain the shape and size of tuberculous deposits differ much less from those of cancerous, as a general rule.

The precise seat of either of these formations cannot in some cases be determined; but, except in the case of the alimentary canal, as already mentioned, they usually seem in the same organ to occupy the same anatomical position. It is otherwise in regard to the points at which they appear. Thus the proneness of tubercle to occur at or near the apex of the lung is a matter of common observation; but, according to Walshe,[1] cancer attacks the more central portions of the organ in preference. Cancer very often invades the œsophagus or the stomach, tubercle is not met with above the ileum.

The *mode of attack* of cancer often, but not always, differs from that of tubercle. A person destined to fall a victim to either may enjoy perfect health, to all appearance, until suddenly struck down by the disease. But tubercle more commonly gives warnings, be they heeded or not, of its approach; and having declared itself, it at the same time pervades the organism and wraps the patient in a false security. Cancer takes hold of one organ, perhaps of several, and bides its time; years may elapse before it claims attention; meanwhile it slowly strengthens its position; at length an accident reveals its presence, and from that time forth its victim feels himself in its power.

Tubercle seems, therefore, if the expression be not too fanciful, to betray its subjects by an insidious approach, while cancer asserts itself sturdily, and renders life a burden by the very delay of its *coup de grâce*.

The *duration* of tuberculous disease varies greatly, as also does that of cancerous. When the brain is the organ attacked, disorders of either class are apt to prove rapidly fatal, although Dr. Wood[2] says that death may be postponed for several years. A case is alluded to by Dr. Pepper,[3] in which certain symptoms had existed for several years, when their true significance was made manifest by other indications of a cancerous growth in the brain; these latter signs, however, were not offered until about three months before death. I have myself seen two cases of large tuberculous deposits within the cranium, in which there had been perfect health until six months before the fatal issue; in two others the disease lasted about one year from the date of the first symptom. But, in truth, it is a matter of great difficulty

[1] Op. cit., p. 343.
[2] Practice of Medicine, vol. ii. p. 614.
[3] Med. Examiner for Dec. 1856.

to assign this date accurately, even in cases in which the disease is external; and much more when the brain is the organ affected. I may, however, mention some general results. Lebert, in the works already cited, states the average duration of tuberculous meningitis as eleven to twenty days, but does not specify any period for similar diseases seated within the cerebral mass. From a table given by him, comparing the duration of encephalic cancer (including meningeal and cerebral) with that of non-cancerous deposits, it would appear that the latter run a much more rapid course. Dr. Wood[1] assigns the third week as the period of greatest fatality in tuberculous meningitis, while Walshe alludes to cases related by Graff and Louis, in which meningeal cancer existed for thirty-seven and forty years respectively.

Cerebral cancer and tubercle seem therefore to be more nearly on a par, as to duration, than meningeal; but, on the whole, the course of tuberculous disease within the cranium is more rapid than that of cancerous.

In the lungs the average duration of tuberculous disease does not differ very materially from that of cancerous, so far as can be ascertained. But as out of forty-four cases of the latter character, collected by Dr. Walshe, thirty-three were in persons over thirty years of age, while phthisis finds more victims between the twentieth and thirtieth year than in any other decennium of life, there is evidently an element wanting in the comparison.

When tubercle is deposited in the alimentary canal, the fatal issue is seldom long delayed. I have recently reported a case to the Pathological Society of Philadelphia, in which the mucous surface of the colon and ileum was thus affected in an extreme degree, in a child who had enjoyed perfect health until within six days before his death. And the same remark may be made of the mesenteric glands. But the average duration of cancerous disease in this locality is stated by Lebert[2] to be something over eighteen months; a fact not without its comparative significance.

Peritoneal cancer and peritoneal tubercle, as far as I can ascertain, are generally thought to run their course with about an equal degree of rapidity.

I have now endeavoured to show that in some of those organs which are, as it were, the common ground of cancer and tubercle, such marked differences exist in the period of continuance of those diseases, as to favour the idea of a general distinction between them. Cancer seems, on the whole, to progress more slowly than tubercle does, in the cases most nearly parallel.

Pain, a very constant and prominent symptom in almost every instance of cancer, is often absent altogether in cases of tubercle. Even in the brain, where perhaps these diseases resemble one another most closely, the paroxysmal character of this phenomenon, when the deposit is tuberculous, is very marked; while that attending cancer is apt to be persistent, at least after the disease is fully developed. Patients whose lungs are perfectly

[1] Op. cit., vol. ii. p. 604.

[2] Malad. Cancér., p. 562.

studded with miliary tubercle may be free from any suffering except that dependent on difficulty of breathing and on the inflammation inseparable from such a morbid state; but in cancer of the same organs there is always the well-known *lancinating* pain superadded to this. Mere pain is, however, far from diagnostic of cancerous disease, since the "painful subcutaneous tumour" is destitute of all malignancy,[1] while, as its name imports, it gives rise to very great suffering. Nor are cases wanting in which the pain caused by cancer amounts to little or nothing, especially in some organs and in certain varieties of the disease. Still, so very large a majority of cases are marked by the continual occurrence of severe, darting, lancinating pains, due apparently to some special property of the morbid growth, that more or less importance must be attached to this phenomenon in reference to the subject now under discussion.

The *mental state* of persons affected with cancer is apt to be one of great depression; they are morose, gloomy, despondent, and irritable. Tuberculous disease, on the contrary, seems to induce a sort of exhilaration, which is persistent in spite of its speciousness; and this remark holds good of all its forms. Nothing is more common than to see a child, saturated, as it were, with scrofula, bright, happy, and contented in a far greater degree than its more healthy playfellows; or to see an adult, far gone in pulmonary phthisis, whose very appearance indicates speedy dissolution, hugging the hope that he may soon be better, and smiling at the fears felt for him by his friends. The extreme and wearing torment caused by cancer may, indeed, in some measure, account for its attendant depression, but cannot be looked upon as altogether explanatory of it. I have myself been deeply impressed with the importance of this phenomenon in the present light, from having observed three cases of extensive tuberculous deposit in the brain, in adults; in all of these there was severe suffering, and yet unimpaired cheerfulness; in one the mental balance was destroyed, but so late in the disease as not to affect the value of the fact. Every one of the few cases of cerebral cancer which have come under my notice has been attended with great depression of spirits.

Hectic fever is universally recognized as of very frequent occurrence in tuberculous diseases, while it is extremely rare to see anything approaching to it in cases of cancer. And it is a symptom of so distinct and definite a character, that the simple fact of authors omitting it, or dwelling so little upon it, in describing the latter affection, is not to be overlooked.

The blue line around the edges of the gums, and the incurvation of the finger nails, so commonly noticed in pulmonary tuberculosis, if met with at all in cancer, have at least a very far less prominent place among its phenomena; my impression is that they do not so occur. These peculiarities are hitherto unexplained, but have a greater degree of diagnostic value than would at first sight appear.

[1] Paget, Lectures on Surgical Pathology, Am. ed., p. 393.

Every one is aware of the very marked relation which often exists between fistula in ano, hæmorrhoids, ulcers, or other external diseases, and pulmonary tubercle. Now, of this fact I would make use in two ways. In the first place, it seems to denote clearly that in tuberculosis there is something more than a mere defect of nutrition; for mere debility is not aggravated by the cessation of a drain upon the system. Nor, secondly, do these affections occur so commonly in cancerous individuals; and when they do, their removal is not followed by any aggravation of the main disease, unless they have partaken decidedly of the same character; so that the error of nutrition productive of cancer would seem to be more marked than that of tuberculosis.

Tumours, strictly speaking, are less frequently formed in tuberculous than in cancerous disease. In the brain, the abnormal growth is, in either case, apt to constitute a separate mass. The lungs, when the seat of tuberculous deposit, are almost always contracted in size, if changed at all in this respect; but when cancerous, they may even cause bulging outwards of the intercostal spaces. As has been already said, when the mesenteric or other lymphatic glands are tuberculized, they are simply swollen; when cancer attacks them, it eventually buries them in a confused mass of adventitious matter. The morbid deposit, in a cancerous pylorus or rectum, is readily distinguishable; in tuberculosis of the intestine, it is constantly discharged by the diarrhœa which its presence induces. In the kidney, according to Dr. Walshe,[1] tuberculous disease is not only very rare, but seldom or never gives rise to any considerable enlargement of the organ, while in cancer its mass is apt to be very greatly augmented. Of the testicle, the same may be said; and it would be useless to dwell upon the fact that cancer nearly always manifests itself externally by a tumour of more or less volume, as for instance in the mammary gland.

We must therefore conclude that the inherent, assimilative, or formative power of cancer is greater than that of tubercle.

The *termination* of any disease must be either by the death of the part affected, or by its restoration to health. Where the disease involves the entire organism, the same statement holds good; the patient either gets well or dies, or else his disorder cannot be said to have terminated.

Neither cancer nor tubercle is apt to stop short of the destruction of life. And the fatal issue may be owing to the obstruction of functions by the local disease, to exhaustion, or to intercurrent inflammations; to say that it might result from the action of a specific poison would be to assume more than has yet been proved. Further enlargement upon these points would be irrelevant to the object now in view; but it may be well to mention that the first and second of the causes above alluded to, seem to act in concert in a larger proportion of cases of tubercle than of cancer. In other words, the power of cancer to exhaust the system, without directly

[1] Op. cit., p. 391.

interfering with any function—to concentrate in itself, as it were, the vital force of the organism—seems to be greater than that of tubercle. There is one mode in which tuberculosis of the lungs proves fatal, which, so far as I can ascertain, has never been observed in cancerous disease of those organs—viz., by the rupture of a bloodvessel at the seat of the deposit. And although this is not of frequent occurrence in phthisis, yet it does happen often enough to be one of the inevitable dangers of the affection; while the consolidating and transforming influence exerted by cancer upon the bloodvessels is sufficient to account for its entire absence here.

Much greater importance attaches to the favourable terminations of these diseases. It is a well-established fact that tuberculous deposits may undergo cretification, and become perfectly harmless; it is also probable that abscesses of a tuberculous character may, after the discharge of their contents, heal up entirely. Here the morbid deposit is either converted into an innocuous foreign body, like an encysted bullet, or is gotten rid of altogether. Cases are likewise said to have occurred, in which cancerous masses have disappeared, or been thrown off, or ossified.[1] But I have met with no satisfactory account of any such instance; and in fact, by the time a cancer arrived at a state in which it could be thrown off, the system at large would almost certainly betray the influence of the disorder; while the mere fact of a tumour disappearing under treatment would afford to most minds ground for doubting its cancerous character. As to ossification, irregular formations of bone are sometimes met with in cases of malignant disease of the testicle, and perhaps in other organs; they form, indeed, an essential element of the "osteoid cancer" of Müller, but that they constitute a transition stage towards health has never yet been shown.

Whether a cancerous mass is separated by an incision through the adjacent sound structure, or spontaneously by a process similar to that for the removal of a mortified part, the local disease is for the time done away with. But to assume that the individual so relieved is cured, is to assume that the local disease is either all, or at least the *fons et origo mali;* which assumption is not warranted at the present stage of our argument.

It may therefore, I think, be asserted that neither cancer nor tubercle can ever be disposed of in any other way than by their virtual death; since during their continuance within the sphere of life, as living tissues, they are not known to pass into the condition of healthy organs, nor do they disappear altogether from the economy without a manifest process of ejection. And in this respect, these deposits differ from all other forms of morbid growth, as will be further shown hereafter.

A question of importance, in connection with the clinical history of cancer and tubercle, is, whether these deposits are mutually convertible? Do cancerous parents endow their children with a tendency to the formation of tubercle, or the reverse? Do scrofulous children ever grow up, to

[1] Walshe, op. cit., p. 134.

die of cancer at a maturer age? Or does the same growth ever present, at different periods of its existence, the distinguishing properties first of one and then of the other form of disease? If such cases ever have occurred, they are not upon record, so far as I can ascertain, nor is their possibility alluded to by authors. So far, therefore, as a negative proposition can be maintained, it may be confidently asserted that cancer and tubercle are not convertible.

(Perhaps it may be as well here to explain, that I do not mean to deny that the son of a man who dies of cancer may be carried off by phthisis, or that a scrofulous child cannot possibly, his scrofula being cured, subsequently become the subject of cancer. Unless cancer and scrofula or tuberculosis are diseases which must pertain to the patient and his heirs forever—unless they never can be spontaneously developed, we may surely imagine one of them to be done away with, and the other to arise at a later period.)

Another interesting question has reference to the co-existence of cancer and tubercle in the same individual. Of all the cases in which this concurrence is stated to have been observed, there is not a single one in which we have conclusive evidence that one part of a deposit was cancerous and the rest tuberculous. And of the few cited by reliable authorities, in which the same person presented formations of both kinds, some doubt may perhaps still be entertained by the sceptical. But here let us note that wherever the cancerous disease may have occurred, the lungs were the invariable seat of the tubercle; and moreover, that the symptoms of the latter affection were always more or less masked by those of its powerful rival. It would therefore seem as if the tubercle had been a mere local disorder, intercurrent to the cancerous disease of the system at large, and perhaps an indirect result of the impairment of nutrition.

When a cancerous testicle is removed, a fresh deposit of the same nature will very commonly be found to occur in the cicatrix; but this does not happen when the affection is tuberculous; here the disease will be apt to be transferred to the lungs. Again, in the lung of a person dead of phthisis there may be the cicatrices of old cavities, surrounded by healthy tissue; the subsequent deposits of tubercle having taken place at other points in the organ. The tenacity with which cancer fastens upon a single part is shown by this fact, as well as by others already mentioned. Some external deposits may imitate tubercle in this respect; I have seen an epithelial tumour of the lip recur twice after removal by the knife, and each time at a different point, the cicatrices remaining perfectly healthy to the present hour.

It may be thought that in the foregoing discussion there has been too little said concerning other adventitious products—that cancer and tubercle have been too exclusively considered. But having now gone over the main facts in the clinical history of those forms of disease, their relation in this respect to other morbid growths may be summed up in a few words.

The comparative infrequency of non-malignant formations in the young, may be accounted for by the employment of the plastic energy in the completion of the frame. And these growths are much more evidently under the control of the assimilative power of the normal tissues, than cancer and tubercle are; they generally occur in direct connection with some healthy structure to which they are analogous. Thus we do not find fibrous tumours in the brain; they are always, when intra-cranial, connected with the dura mater. Occasionally, cartilage is met with as a morbid deposit in the lung, testicle, &c.,[1] but always where a strong suspicion, or even proof positive, of malignancy exists. And I think it may be asserted that growths clearly innocent, although they may either push aside or cause to be absorbed the adjacent tissues, never transform them into their own likeness, as seems so palpably the case in cancer. The pain which occurs in tumours of the former kind can always be explained, except sometimes in its degree. No definite rule can be laid down as the average duration of innocent tumours, since they do not display any aggressive tendency, but if they destroy life, do so as it were indirectly. They may become absorbed under the influence of pressure, or become spontaneously atrophied; and if removed by operation or otherwise, the entire disease is gotten rid of.

III. Without entering at any length into the subject of the morbid anatomy of cancer and tubercle, I wish merely to touch upon a few of the prominent points of discussion in regard to it, mainly in order to show more clearly the object of this paper, and thus to give force to the preceding considerations.

The anatomical theory which prevailed until within the last few years was, that malignancy resided in certain textures essentially unlike any of the normal constituents of the frame; and that the local disease reacted upon the system in such a way as to enhance and aggravate the vitiated condition originating it. Expressions are sometimes used which would imply that the primary lesion may be an entirely local formation; and that this latter, taking on a malignant character, may infect the whole organism; but such an idea is not borne out by facts.

An attempt is now making upon the part of many pathologists, to show that cancer and tubercle are homologous with some of the simpler anatomical elements of the economy; in other words, that those morbid deposits are not visibly specific.

Errors in nutrition must consist either in excess, deficiency, or perversion. Cancer and tubercle are evidently due to errors in nutrition; now if their anatomical elements are homologous, the error *as manifested locally* is one of excess, and not of perversion. And even if the position of those elements, either with regard to one another or to other tissues, be abnormal, the error is not essentially modified. The material furnished from the blood must be just the same as that from which the same tissue is elsewhere developed;

[1] Paget, op. cit., p. 421.

and although the arrangement of the component parts of the morbid growth should not be just the same as in its healthy analogue, still the error is mainly one of excessive production only.

Now, in the view of those who sustain the theory last mentioned, tubercle is an exuded matter which progresses no further than to the formation of nuclei. But this view is, I think, altogether set aside by the fact, that in growths confessedly cancerous, which are increasing rapidly—and in which, therefore, great formative activity is displayed—microscopic examination almost always reveals hosts of free nuclei; I think I may say that this phenomenon is invariable in such cases. Nuclei being present in plastic matter, cells are formed as an easy consequence; in other words, the origination of a nucleus is the great step, and constitutes sufficient evidence of the possibility of that of the cell. And if it be said that in the case of tubercle this subsequent step does not occur because material is wanting, it may be asked how it is then that fresh nuclei can be developed. It seems to me that such a theory implies that the greater is possible where the less is not.

As regards the idea that cancer-cells are merely misplaced, and not essentially abnormal, there are some considerations which militate strongly against it, and others, chiefly I think negative, which favour it. Virchow's comparison of these forms with epithelial cells is in many cases very plausible; so also is that of Wedl, with the elements of areolar or connective tissue. On account of the difficulty of assigning clearly the mode of inception of elements really heterologous, as well as of explaining wherein the heterology exists, whether it be local, constitutional, or both, views so convenient are apt to be readily accepted.

Opposed to this theory in all its modifications, is in the first place the fact that both cancer and tubercle are met with in situations where neither epithelium nor areolar tissue exists normally; as, for instance, within the mass of the cerebrum or cerebellum. Secondly, the fact that when these growths do occur in parts supplied with those normal forms, they do not obey the same laws, or manifest the same effects, that mere excessive productions of those forms would; thus, a cancer of the uterus runs a widely different course from that of a fibrous tumour of the same part. Thirdly, the fact that these formations do not, although evincing a high degree of energy, go on to the full development of their alleged homologues; thus, the elements of a cancer which has been slowly growing for ten or fifteen years can hardly be regarded as on a par with "*young* connective tissue," especially as so many tumours of this kind do actually contain fully-formed areolar or connective tissue. And when an increase in the rapidity of growth is observed, this does not manifest itself in the completion of the so-called partly developed material, but merely in a fresh accumulation of similar elements. Fourthly, the fact that neither tubercle nor cancer can be induced by merely modifying those conditions of any part which concern

its nutrition; in proof of which it may be mentioned that cases of pneumonia would, on such a supposition, seem in the highest degree likely to end in tuberculous disease, while in reality they very seldom do so. Fifthly, the fact that in their apparent origin, in their clinical history, and in their anatomy, cancer and tubercle have very few features in common with other forms of disease.

I am by no means prepared to offer any theory as to the true explanation of malignancy in morbid growths, or even to assign its primary seat. Cases sometimes occur in which the system seems, as it were, saturated with a poison, which breaks out in multiple manifestations; in others the disease seems to be almost altogether local, at least for a time. Now, in these latter there is much more of an analogy with the ordinary course of syphilis than in the former, which are more closely allied to its purely constitutional secondary or tertiary developments.

Perhaps it is as unphilosophical to strive to do away with mysteries, as to abandon all hope of clearing them up; and the true course here as elsewhere lies between the two extremes. The foregoing remarks have been called forth by the tendency which seems to me to have acquired an undue prevalence of late, to allow the clinical history of cancer and tubercle to be overshadowed by their minute anatomy. Nothing is gained by an attempt, upon insufficient grounds, to prove the conformity of malignant growths to normal types of structure. The field is so vast, that one corner may engross too much attention, and a mass of material may be neglected while a small modicum is worked over. Conclusions based upon insufficient data are sometimes confirmed, but are quite as often overthrown, by subsequent research; and I cannot think that the time has yet come when we can decide the question whether the matter of cancer and tubercle is or is not specific—is homologous or heterologous. Let it be remembered that the study of this subject, under altogether favourable circumstances, has been but very recently begun; and that the surest way to its elucidation is not the driving of its obscurity into less accessible ground, but careful generalization from the largest possible amount of accurate and systematic observation.

ART. VII.—*Successful Treatment of a Case of Ligamentous Union of Fractured Radius and Ulna by Drilling and Wiring, after Failure by other Means.* By E. K. SANBORN, M. D., Professor of Surgery in Castleton Medical College.

ALTHOUGH cases of *non-union* or *ligamentous union* of fractured bones are of considerable frequency, and, when occurring, are of most serious consequence to both patient and surgeon, it would probably be the feeling

of most surgeons, if expressed, that there is no class of surgical cases in which they would operate with less certainty of success, or be more embarrassed in the selection of the best method of operation, than the one under consideration; for, notwithstanding a varying degree of success has followed a great variety of operations for ununited fracture, the very multiplicity of methods recommended by distinguished authorities is a virtual confession of the inadequacy of any operation yet devised to safely meet in all cases the surgical exigency of a confirmed *non-union.*

The *seton* has been successful in many cases; but it has also failed in more cases, probably, than any other means, because, on account of the comparative ease with which the operation is performed, and its apparent freedom from danger, it has been performed more frequently than any other operation. But, aside from the uncertainty attending the introduction of the seton, the recovery, if it takes place, is prolonged and tedious, and the operation is not always free from danger, particularly from erysipelatous inflammation, induced by the presence of so large a foreign body in the cellular tissue.

Resection has also had its triumphs; but it has also signally failed; and, where recovery takes place, it is not a restoration of the strength and proportions of the limb, on account of the shortening which is necessarily involved in this operation. It is also a dangerous operation; and a *failure,* if it is not accompanied by loss of the limb, generally precludes all chance of success from any subsequent operation.

The method of *drilling* the ends of the fractured bones, to induce adhesive inflammation, which has been introduced within a few years, though not a difficult or dangerous operation, and in many cases a successful one, is still unreliable, for it has failed, after thorough trial, in repeated instances. Dieffenbach's operation, of introducing ivory pegs, and Langenbeck's modification of it, the substitution of iron screws for the pegs, are severe operations, and the former, at least, uncertain. During the winter of 1854 I had the pleasure of seeing the distinguished Berlin surgeon, Langenbeck, perform his peculiar operation in two cases with success; and he informed me that it had never failed in his hands, though he had not applied it in the *femur.*

On returning home, I recommended the operation in a case of ununited fracture of the humerus, and assisted to perform it. On the second day it became necessary to remove the screws, in consequence of the violence of the inflammatory action, which soon took the form of *phlebitis,* and resulted in destruction of the head of the humerus, abscess, and finally anchylosis of the shoulder-joint. Although the patient's life was endangered by this operation, yet the union of the bone was perfect, and the arm is now strong and useful.

Though strongly impressed in favour of the German operation by the results I saw from it in the hands of its skilful originator, my experience

in the above-mentioned case has not inclined me to repeat it; though I am fully of the belief that the complication of phlebitis, &c., in the case arose from accidental causes, which could be avoided in another operation.

A case of ligamentous union in both bones of the forearm has been treated by me within the last few months, with such satisfactory results as greatly to increase my confidence in the efficacy of surgery in these cases, and also to confirm my belief in the "*law of tolerance of living structures for the presence of foreign metallic bodies.*"

CASE. Mr. J. H. P., of Vermont, aged 33, of lymphatic temperament, and inclined to corpulency, broke his forearm in January, 1858, while at work in the woods. The points of fracture were—*radius*, upper third; *ulna*, junction of middle and lower third, or about three inches below the upper fracture. The fracture was simple, and presented no extraordinary features in any respect. The limb was dressed by a neighbouring physician without any delay; four plain splints being used, according to the patient's account, and the arm being suspended by a sling in a *prone* position. After the lapse of four or five weeks it was ascertained that no union had taken place, and, by the advice of another physician, a single splint (*Goodwin's spoon splint*) was substituted for those originally adjusted. Subsequently a starch bandage was applied over the splint. The fracture still giving no signs of consolidation, several attempts at inducing union by rubbing the ends of the bones together, &c., were made during the three following months, but with no effect. In September, eight months subsequent to the accident, the patient went to Albany for advice and assistance, and finally placed himself in the hospital for treatment. A seton was introduced at the point of fracture in the radius, the fractured ends of the ulna were drilled, and the ligamentous union lacerated subcutaneously. On the third day symptoms of erysipelatous inflammation appeared about the upper wound; and on the fourth day the seton was removed, in consequence of the violence of the local and general disturbance. The inflammation soon subsided, and the patient, after remaining in the hospital three and a half weeks, returned home with the arm in splints, with some appearance of commencing union, at least in the upper fracture. These appearances, however, were fallacious, and in November the patient returned to Albany, where the operation of drilling, &c., was repeated. No perceptible effect followed the second operation, and the patient soon returned to his home.

In December—a year, within a few days, from the time of the accident—the patient presented himself to me for examination and advice. The limb then presented the usual features of false joint. There was no soreness of any part; the limb was, however, entirely powerless—not strong enough to sustain its own weight—while the ends of the fractured bones could be readily felt as the arm bent by the weight of the hand.

The patient was naturally very much discouraged, and had little faith in any further attempts on the arm. I proposed and explained the operation that I finally performed, after his assurance that he should not, at any rate, return to the hospital. He left, undecided as to his course. In about two weeks he returned, and placed himself under my charge; and on the 23d of December I performed the following

Operation.—Having previously decided to operate on but one fracture at a time, I selected the upper one, or the radius, for the first trial. I first

made an incision, about four inches in length, on the radial side of the forearm, directly over the fracture. The incision was then extended down to the bone, and the broken ends displayed. A knife was then passed through the fracture, separating the connecting ligament readily. The ligamentous covering was then carefully dissected from the end of each fragment. The fracture was found to be *oblique*, the lower fragment lying by the side of the upper, and separated from it about *half an inch*. The wedge-shaped end of each fragment was then bored through with a small gimlet, at a distance of three-quarters of an inch from the end, and through these holes a *stout silver wire* was passed, and the ends twisted with strong clasp forceps until the broken ends were firmly held together in the loop. The external wound was then loosely brought together by adhesive strips, the twisted ends of the wire projecting an inch or more from the middle of the wound. The limb was placed in an elbow-splint—made of tin, for the purpose—extending from the axilla to the fingers. The splint was placed on the inside of the arm and forearm, and was deep enough to embrace one-half the circumference of the limb, while the wound was left free for dressing, &c., without disturbing the arm. The wound was finally dressed with lint and cold water.

The patient underwent the operation without any anæsthetic, by preference. One small artery only was ligatured.

Dec. 24. Saw the patient at 9 A. M. Found him in bed, with some febrile symptoms. Pulse 100; face slightly flushed Chiefly complained of pain in the head and back, which prevented him from sleeping the latter part of the night. No pain of consequence in the arm. Changed the dressings. Found the limb swollen below the elbow, with bloody serum discharging pretty copiously from the wound. Ordered a saline cathartic, with mucilaginous drinks.

25*th.* Patient passed a better night than the one before, though complains still of pain in head and back. Pulse 90. Is sitting up, and makes no complaint of the arm.

Jan. 2. Nothing worthy of mention has occurred up to the present time. The wound commenced discharging freely on the fourth day, and the swelling has rather increased, though there has been no particular pain in the limb. Last night there was a sudden recurrence of pain in the head and back, accompanied with difficulty of breathing, and cough. The limb was observed also to be hot, and more painful, with an erysipelatous blush extending up to the elbow. At eight in the evening I applied a solution of sulphate of iron as a lotion to the limb, and gave directions for its assiduous application during the night; also administered a diaphoretic mixture. This morning I found the patient relieved, with scarcely a trace of inflammation in the skin, which is yellow and shrivelled under the application of the iron.

20*th.* The patient has been progressing favourably. There is now no soreness. The wound has healed up, as far as the projecting wire will allow it. Very little discharge from the wound. No swelling in the limb generally, and very little about the fracture. Took the arm out of the splint, and found no evidence of union. The wire was loose in the bones, and could be handled without giving pain. The arm was carefully replaced in the splint, and with strong clasp forceps the wire was twisted as tightly as the patient could bear.

22*d.* The operation of twisting the wire has been followed by pain and

swelling, and increased discharge. The pain, however, is up and down the radius. At the point of fracture, also, the bone is extremely sensitive, and the least touch of the wire gives great pain. Patient is now taking phos. lime and chalk in considerable quantity.

24*th*. The swelling and sensitiveness in the region of the fracture have greatly diminished. The wire has also become slightly loose in the bone. Something like an ensheathing callus is observable at the point embraced by the wire. The wire is again twisted until the patient exclaims from pain.

Feb. 1. The operation of twisting has been continued every alternate day up to the present time. A temporary discharge has been produced, but the increase of the *callus* is quite evident. This morning, while twisting the wire as usual, the small neck of bone that held it gave way, and the wire was wholly removed.

2*d*. Removed the arm from the tin splint, and made a careful examination. The *union* is evident, though it is not firm. As the swelling has nearly subsided, I substituted the *gum and chalk bandage* for the splint, enveloping the limb from the axilla to the fingers with several layers of bandage smeared with a thick mucilage of *acacia*, thickened to the consistence of white paint with *pulverized chalk*, leaving a small open space opposite the small wound whence the wire was removed.

15*th*. Removed the gum bandage, and found the union quite firm. A small abscess occurred, just over the point of fracture, a week since, but it is now closed. The patient having the impression that the lower fracture is also consolidating under the influence of the stiff bandage, it is reapplied, and Mr. P. goes home to await the result.

March 16. The expectations of the patient in regard to the fracture of the ulna have not been realized. Although the arm is quite strong, and the use of the thumb and first and second fingers is recovered, the condition of the false joint in the ulna remains unchanged. Accordingly to-day I performed on the *ulna* precisely the same operation that I previously did in the case of the *radius*. I will not go over the details of the second operation, which would be merely a repetition of the first account. The condition and situation of the bones were nearly the same as in the radius. A little more difficulty was experienced in introducing the wire than in the first instance, on account of the inability to *turn out* the ends of the bones from the wound, as was readily done in the operation on the radius. The same splint and dressings were used as in the previous operation.

April 1. No unfavourable symptom has been manifested since the second operation. The wound has nearly closed. A large *node* or *callus* has been thrown out about the wire, and union is evidently taking place. The patient is out of doors daily, and has not been confined to bed since the operation.

12*th*. The wire was to-day removed by gentle twisting and traction, and the union found to be quite firm. The arm was replaced in the splint.

20*th*. The wound in the arm has been closed several days. The patient is gradually beginning to use the arm. Both fractures are *perfectly consolidated*. The power of pronation and supination is possessed to a considerable degree, and it is quite evident that a little *use* is all that is required for the complete restoration of the motions of the arm.

May 21. As a completion of the somewhat extended history of this case, I will only add that I have had frequent reports, up to the present date, of

the daily improvement of my patient's arm under the influence of daily exercise about the farm.

Remarks.—The wire used in these operations was composed of four threads of silver wire, of the size recommended by Dr. Simms for sutures. Being closely twisted, they made a wire of the size of a small knitting-needle; and, from its perfect flexibility and strength, I found it much easier of introduction, and more manageable afterwards, than would have been a single wire of similar size and strength.

The difference in the *time* of union in the two fractures will have been noticed by the reader. In the *radius* there were no signs of union on the thirtieth day after the operation.

In the *ulna* union was quite evident as early as the sixteenth day after the operation, and apparently firm in twenty-eight days.

In the *radius* the wire was so firmly held in the bones as to be removed with great difficulty, and after repeated trials of the *twisting* process.

In the *ulna* the wire was removed, without force, after *once* twisting with the forceps.

Undoubtedly one reason why the second fracture united so readily was the *immobility* secured by the previously united radius. But still another cause, I think, may be found in the fact that in the last operation, besides the holes bored for the reception of the wire, I made several *other* perforations with the gimlet in each fragment, a feature in the operation which I should be careful not to omit in another case.

I am aware that the *wire* has been used before in treating ununited fracture; but, as far as I know, it has been to *secure coaptation of resected bones*, as in Rodgers's case (N. Y. Hospital), and Brainerd's case (*Am. Journ. Med. Sciences*). In the latter case the wire *embraced the circumference* of the broken shaft, and in both *resection* was the operation, and the wire was used as an auxiliary.

If it shall be found that the dangers and deformity of resection can be avoided, and that the *metallic wire* alone, through its instrumentality in procuring apposition of separate fragments, but more particularly in its peculiar property of exciting *adhesive inflammation* in living tissues, is the safer and surer means, it will not be one of the least of modern improvements in surgery.

In concluding, I take pleasure in referring to the valuable assistance received, in treating the above case, from Prof. Woodward, of Castleton; Dr. Griswold, of this town; also Dr. Page, brother-in-law of the patient, to whose immediate and constant supervision of the case the success is in a great measure, undoubtedly, due.

RUTLAND, VT., May 23, 1859.

ART. VIII.—*The Uterine Dilator.* By HORATIO R. STORER, M.D.

IN January last I took occasion through the pages of this Journal to call the attention of the profession to various incidental questions connected with artificial dilatation of the uterus.

At that time the only means known of directly attaining this end was by the use of expansible tents. I make this statement advisedly; for the elastic bougies of McIntosh and the unyielding ones of Simpson, the spring knife of the latter, the hollow tubes used by Wakley for urethral stricture and adopted from him by Baker Brown, and the instruments of Drs. Graham Weir and Rigby with expanding metallic blades, have all of them proved inefficacious or hazardous. The first two on the list are slight in their immediate action and excessively wearisome to both operator and patient; those subsequently mentioned are often difficult to use and at times still more so to control. Where there are cutting blades there is danger of hemorrhage, and where the divisions of the instrument act only by pressure it falls unequally and not upon the whole circumference of the cervical canal.

It is with pleasure, therefore, that I proceed to announce an additional method of dilating the uterus, far more controllable, effectual, and reliable in its action, so far as I am aware new in its application to this organ, capable of being applied to its body as well as to the cervix, and probably destined to effect a complete revolution in the treatment of many forms of obstetric disease.

There are various objections to the use of expansible tents for dilatation of the uterus, of whatever material they may be made. These objections are so decided in the case of sponge, that for nearly five years I have been engaged in a series of experiments, having for their sole object the discovery of an available substitute.

Early in 1855, in a paper read before the Medico-Chirurgical Society of Edinburgh, and reported in the *Association Medical Journal of London*,[1] I proposed the use of mucilaginous tents, and suggested for this purpose the inner bark of our native slippery elm (*ulmus fulva*).

Several months later, allusion was again made to the necessity of a safer and more controllable agent for dilating the uterus than sponge.[2]

In November of the same year I published a paper upon the subject in the *Boston Med. and Surg. Journal*,[3] stating, as I had previously done, my dissatisfaction with the agent then proposed, except for cases, like

[1] May, 1855, p. 446.

[2] Preface to Simpson's Obstetric Memoirs and Contributions, Sept., 1855.

[3] Nov., 1855.

mechanical dysmenorrhœa, requiring a comparatively small amount of dilatation.

The article of January last, to which I have already alluded, again pointed out the importance of this inquiry.

Though the earlier of these communications, which were based upon experiments with other mucilaginous agents than elm, were quoted at some length in several foreign journals[1] besides that in which the first appeared, an English physician, Dr. Aveling, of Sheffield, has lately renewed the proposal of mucilaginous tents,[2] apparently ignorant that in this he had been anticipated by over three years. Gentian root, however, the substance he recommends, is among the agents I had previously made use of, and had thrown aside as comparatively worthless. The root of the officinal gentian, as is well known, contains scarcely a trace of mucilage; the spurious root, ranunculus thora, often sold for the gentian,[3] and undoubtedly referred to by Aveling, affords a larger percentage, but is greatly inferior in this respect to elm.

The uterine dilator now presented to the profession acts by fluid pressure, and is a modification of an instrument suggested for the female urethra by Spencer Wells, of London,[4] which in its turn was taken from the dilator for urethral stricture invented by Arnott and further modified by Thompson. It is a curious fact in the history of the various means thus far proposed for dilatation of the uterus that they have all without exception been based, directly or indirectly, upon some method previously in use for the treatment of strictures of the male urethra.

The instrument consists essentially of three portions: a distensible sac, the dilating medium—a hollow staff, for support and as a channel of communication to and from the aforesaid sac—and an external source of supply. By the aid of the staff, the sac is introduced undistended into the cavity of the cervix or of the uterus itself as may be desired, and by its enlargement any amount of dilatation may at once be effected.

In Mr. Wells' apparatus, the first of the portions described consisted of rubber tubing; and the third, of a common syringe.

Against rubber, however, even when vulcanized, there are objections for all purposes requiring its exposure to the fluids of the vagina. It is apt to be chemically acted upon by these, to become offensive, and from absorption of the products of its decomposition there is danger of pelvic cellulitis. It is also necessarily somewhat bulky; the thinnest qualities being liable to tear if exposed to any considerable amount of distending force, especially if increased by external pressure. I have, therefore, supplied its place by

[1] Glasgow Med. Journal, April, 1856, p. 116; Braithwaite's Retrospect, January, 1857, p. 247, &c.

[2] Med. Times and Gazette, June, 1858, p. 653.

[3] Griffith, Med. Botany, p. 461.

[4] Med. Times and Gazette, July, 1858, p. 84; with wood-cut.

gold-beater's skin, and in practice have found the membranous sheaths sold for the prevention of pregnancy to be admirably adapted for the purpose; an end certainly much better than that to which they are usually applied.

The staff, if the uterus is unimpregnated, should be of silver; a hollow tube of sufficient length, some ten inches, to enable it to project externally, of an internal diameter varying with the case, and perforated laterally at its further extremity. In these respects a male catheter might suffice, were it not that the curve must be extremely slight, to correspond with the axes of the female pelvis.

Where the uterus is displaced, unless it is immovably fixed by adhesions or by the pressure of some morbid growth, the same curve may be used, provided that, if necessary, the organ has been reduced by the sound; if this cannot be done, a curve especially adapted to the displacement may be required.

In pregnancy, however, where the dilatation is for the purpose of inducing premature labour, the tube should be of larger size than would otherwise be necessary, or it should be flattened, to guard against laceration or a pressure too sharply defined. Near the close of gestation, when the cervix is nearly effaced, the tube, if circular, should be at least the sixth of an inch in diameter. The employment here of the ordinary flexible catheter, gum elastic, will generally be found preferable; as this, by means of its wire stylet, can be made to assume any desired curve during introduction. After the wire has been withdrawn, the flexible staff occupies so little space and is so yielding that it can occasion no injury to either mother or child.

For the ordinary syringe I have substituted the elastic pump of Higginson, as preferable in every respect. When attached, it forms with the remainder of the instrument a continuous tube; there is no unnecessary manipulation of the stopcock when the pump is in action, nor is there the liability of injecting with the fluid a quantity of air, which in case of the rupture of the sac might give rise to a serious result.[1]

For uterine dilatation a different mode of attaching the sac to its staff is necessary than in treating stricture of the urethra. A movable ring, bevelled on the edges and conformable in its position to any given case, is applied to the circumference of the staff. It should consist of gutta percha, which best answers the various indications, perfectly retaining its position without being too unyielding; yet easily moved whenever required, after softening by hot water. The sac having been slipped over the staff, it is fastened to it and confined within any desired limits by a pair of ligatures, the one above and the other below the ring just described; a third ligature is applied more externally, to confine the otherwise loose outer extremity of the membranous sheath.

[1] Reid, Physiological, Anatomical, and Pathological Researches, p. 578. Simpson, loc. cit., i. p. 719; ii. p. 73.

To the upper end of the staff a flexible tube is attached, of sufficient length, by extending beyond the bedclothes, to prevent any exposure of the patient, and fitted with a stopcock, by which the amount of pressure can be regulated at will. To the outer portion of this stopcock the pump is joined by a small rubber coupling, which readily permits its removal.

For the dilating agent a liquid is essential; it should be slightly warmed, lest too sudden a shock be communicated to the mother or fœtus; its temperature, however, soon becomes raised to that of the blood. The presence of air should be carefully guarded against, for the reason already given, sudden death having followed its introduction into the uterine sinuses; air has, indeed, been proposed in a French journal as a dilating agent for the os; but for this purpose its use is not only of doubtful feasibility,[1] but unjustifiable.

Previously to introduction the sac should be thoroughly discharged of air by reversing the ends of the pump, then well lubricated and wound smoothly about the extremity of the staff. As it becomes distended it successively assumes a fusiform and globular shape, while the further it is introduced the more readily it will retain itself within the uterine passages.

I will now proceed to relate a case, so far as I am aware the first instance in which fluid pressure, as such, has been employed for artificial dilatation of the uterus. The instance of the uterine douche, to excite premature labour, cannot be alleged in contravention of the above statement. That method, as usually applied, is confined to the vagina, producing its effect of relaxing and opening the cervix wholly indirectly, by reflex action, or if also by upward pressure, yet to a limited extent; Kiwisch, indeed, thought that the relaxation was merely in consequence of absorption of the injected fluid. In the rarer cases, where the stream of the douche is actually thrown into the uterus, the intention has been to produce detachment of the membranes, and thus alone does this method act; most of the fluid being immediately discharged again by the simple tonic pressure of the uterine walls. Similar reasoning applies to the ingenious combination by Graham Wier of the two plans of Hamilton and Kiwisch—its action being merely to the same end, "separating the membranes to some distance from the vicinity of the os;"[2] while the caoutchouc bottles that have also been used seem always to have been placed in the vagina, and to have acted merely reflexively. They cannot, therefore, be considered in the light of a direct uterine dilator.

Distension of a retained placenta by injections of water through the funis, as in a case of my own at the Boston Lying-in Hospital,[3] might seem somewhat analogous to the method now proposed, but it is not in any respect.

[1] Gardner, On Sterility, p. 148.

[2] Edinburgh Med. and Surg. Journal, April, 1855; "Case Book," p. 40.

[3] Boston Med. and Surg. Journal; Lying-in Hospital Reports, 1855.

CASE. Mrs. N——, aged 31, of West Roxbury, a healthy and robust woman of middle height, came under my charge, March 17, 1857; then in labour at the full time.

On inquiry, I found that she had previously been confined thrice, and that on each occasion the child had been removed by craniotomy.

Upon examination, the os proved fully dilated and the presentation normal; but the head had not yet entered the pelvic brim, though the labour had been present for many hours. After further waiting, no advance having been made, the long forceps were applied, but without avail. Complete anæsthesia was now produced, and the child turned; delivery of the trunk was effected, but no efforts were able to release the head, and it eventually became necessary to lessen it by perforation beneath the chin.

Although the patient was cautioned against a recurrence of pregnancy, she presented herself at my office in the latter part of November, 1858, again over three months gone; to choose between premature labour and the Cæsarean section.

On April 13, 1859, with the assistance of my friend, Dr. Nathan Hayward, of Roxbury, who was also with me in her former confinement, I commenced the induction of premature labour; somewhat over eight months having elapsed since the last catamenia, and the capacity of the pelvis having been increased as far as possible by mild cathartics and a sparing diet.

Upon examination, the os was found elevated, situated anteriorly, and the cervix almost entirely effaced. After careful exploration with the double stethoscope, it was decided that the placenta was attached to the left of the fundus uteri, and a little posteriorly.

9.30 P. M. The instrument above described was now introduced within and above the os, and the sac, previously adjusted to the size of a pigeon's egg, was inflated. No sensation of pain.

10.30 P. M. Instrument easily withdrawn; still distended to the full extent, the os having been correspondingly dilated. Upon being reintroduced, the size of the sac was doubled, and the patient then left for the night.

April 14, 8 A. M. Has had a comfortable night. Pulse 84; skin cool and moist. The instrument was again withdrawn, fully distended; by measurement the sac being 3½ inches in length by 2 inches and 4 lines in breadth. The diameters of the sac were now still further increased. As yet no pain. Fœtal circulation unaffected.

11.30 A. M. Pulse 96. The sac was found partly protruded into the vagina, but still distended. Upon its reintroduction, slight uterine contractions were observed.

12 M. Pains distant, but somewhat increased in severity. It was discovered, on allowing the sac to drain itself under the normal pressure of the uterus, that a pain could be almost instantaneously excited by refilling it, as was also the case upon its sudden discharge. During one of these experiments the sac was burst under the compression of a pain, and a new membrane was substituted.

2 P. M. Bowels cleared by an enema. Pulse 100. A slight sanguineous show upon withdrawing instrument, which was, however, reintroduced. Fœtal circulation unaffected. At no time has the sac afforded any offensive odour.

15*th*, 3 A. M. Patient awakened by the occurrence of smart uterine contractions, by which the dilator was expelled into the vagina. From this moment the labour regularly progressed; chloroform being administered during the pains.

8 A. M. Os fully dilated. Presentation footling, as had been hoped.

9 A. M. Membranes artificially ruptured; and with consecutively recurring pains the knees, breech, shoulders, and head were with difficulty delivered.

The child, a boy, lived for two hours after birth, and was lost in consequence of the compression to which it had been subjected while passing the pelvic brim. The effect of this compression was evidenced at the time by excessive and convulsive fœtal movements. The fœtus was 19½ inches in length, and its cranium 4 inches in lateral diameter.

Hemorrhage subsequent to delivery had always been excessive, and was so now; but the patient's recovery has been better than ever before.

In reviewing the above case, several points are noticeable; the unusual elevation of the os, into which a tent could only have been introduced with difficulty, the rapidity of dilatation, the freedom of the sac from offensive odour when withdrawn, the absence of discomfort to the patient, and the fact that exosmotic transudation of the fluid and consequent emptying of the sac did not take place. It would have been preferable that the trial case had been with a pelvis free from deformity, as the labour, though here but six hours, might then have been shorter, and the results of the treatment proportionately more striking.

I am satisfied, however, that the method is an excellent one, and that for the induction of premature labour, it approaches nearer than any other to the character of the normal process at the full period of pregnancy. It is equally well adapted for cases of rigidity of the os uteri, of premature rupture of the membranes, and for all complications where it is desirable to produce immediate dilatation and the completion of the first stage of labour.

Upon being introduced within the pregnant uterus and distended, the sac acts in a threefold manner; reflexively, as a foreign body—reflexively and directly, by separating the membranes from the uterine walls—and directly as a fluid wedge, by dilating the os; in each of these three respects, the effect of our being in proportion to the amount of distension applied. The dilatation, it should be noticed, is here *from above downwards*, while the tent dilates from below upwards.

In the case that I have reported it was noticed that, by suddenly evacuating the sac, uterine contractions were at once occasioned, just as frequently occurs upon puncturing the fœtal membranes; and that after a certain period they were also determined by rapidly refilling the sac, or by increasing the amount of distending force. The possibility of a greater or less degree of distension affords all the advantages, without the drawbacks, of a successive gradation of expansible tents; while, after the sac has been introduced above the os and filled, it cannot possibly be discharged or withdrawn, unless intentionally, until the requisite amount of dilatation has been effected. The sac is of course liable to laceration under great distension or during a pain; but this accident can with care almost certainly be prevented.

Being introduced by the staff, the position of the instrument, anteriorly, posteriorly, or laterally, in relation to the fœtal membranes, can also be determined as perfectly as where labour is induced by their detachment with the sound or bougie; a matter of no small importance.

Upon presenting the central mass of the elastic pump to the stethoscope, the continuity of the column of water remaining unbroken by the stopcock, I am quite confident that the sounds of the fœtal heart were rendered much more distinctly audible. This experiment is an interesting one, and in cases of premature labour may be made productive of a practical result. My friend, Dr. Keiller, of Edinburgh, has proposed a curved vaginal stethoscope, which, however, it is difficult at an early period of labour to bring in direct contact with the bag of amniotic liquid. The fluid column now described is but a further development of the same principle.

The indications for dilating the uterus where pregnancy does not exist, I have already adverted to in my previous papers. This instrument will be found of advantage in all cases where any other form of dilator can be introduced—if, indeed, the canal of the cervix is at all pervious. Should, however, complete occlusion exist, whether congenital or resulting from adhesive inflammation following injuries during labour, attempts at criminal abortion, amputation of the cervix, the improper employment of caustics, &c., its use should be preceded by a perforating trocar. In all other cases of cervical occlusion requiring treatment for dysmenorrhœal symptoms or to assist impregnation, the dilator will be found to avail; such are spasmodic constriction, general or polypoid congestion of the mucous membrane, hypertrophy and induration of the cervical tissue. If occlusion is caused by an uterine flexion, the case is one for the sound and stem pessary rather than for dilatation, unless the pressure shall have also organically narrowed the uterine canal. Other diseases of the neck of the uterus to which treatment by the dilator is applicable, vesicular polypi, uterine hemorrhoids, cervico-vesical and other fistulæ, will readily suggest themselves to the practitioner.

In affections involving the body of the womb, the need of an efficient dilator is no less evident, and I have no question that this instrument may be readily used in some forms of uterine disease hitherto considered beyond our aid. Congenital atrophy, for instance, and that other variety resulting from super-involution after delivery, to which the application of mere mechanical irritation by the sound or a galvanic stem pessary has thus far alone been possible, are both cases in point.

In the reduction of chronic inversion the dilator is also indicated; and for both diagnosis and treatment in all affections of the uterine cavity—fibrous and other tumours, whether intra-mural, sessile, or pediculated, carcinomatous disease, moles, hydatids, &c.; but the consideration of these points, illustrated by experimental cases, I shall reserve till a future period.

BLUE HILL, MILTON (NEAR BOSTON), May 16.

ART. IX.—*Observations upon the Relations existing between Food and the Capabilities of Men to resist Low Temperatures.* By ISAAC J. HAYES, M. D., late Surgeon to the Second U. S. Grinnell Arctic Expedition. Read before the Academy of Natural Sciences, Biological Department, April 18, 1859. Recommended for publication April 26, 1859.

DURING the late cruise of the Advance to the Arctic Seas, my attention was directed to some facts in relation to the capabilities of men to resist low temperatures, which, at the friendly suggestion of Dr. Hammond, I have grouped together. With the permission of the Department, I will submit what I have written, prefacing it with the single remark that I have confined myself chiefly to what has fallen under my own immediate personal observation.

There is a great misapprehension existing in the popular mind upon the subject of Arctic life. It is, I believe, pretty generally thought that Arctic travellers are necessarily subjected to great hardship, in consequence of the lowness of the atmospheric temperature, and that almost superhuman powers are required to resist it. This is, I can but think, a great mistake. The animal economy, everywhere, adapts itself with greater or less facility to surrounding circumstances, and this power of adaptation is nowhere more strikingly exhibited than in the Arctic regions. The appetite and the digestive powers are, doubtless, more intimately concerned than any other of the animal functions, and, in the quantity and quality of the food consumed, we are led to look for an explanation of the cause which enables the inhabitants of Arctic countries so successfully to resist the cold.

During the stay of the Advance at Renssellaer Harbor, in 1853, '54, and '55, on the western coast of Greenland, in latitude 78° 37′, we had frequent intercourse with a tribe of wandering Esquimaux, numbering in all about one hundred and fifty souls, inhabiting the shores of the head waters of Baffin's Bay, from Cape York to the mouth of Smith's Strait. These people live mainly without fire. The land being destitute of wood, and none being drifted to them from the sea, they had no means of creating an artificial temperature except with a small lamp—merely a stone dish—with blubber for fuel and moss for wick. The flame of this lamp gives very little heat, and is barely sufficient to melt from the snow the water which they require, and to light their hut during the dark period of winter. These huts are often built of snow. Their permanent habitations are, however, constructed of stones and moss, and are about ten feet in diameter, by from five and a half to six in height. But these huts they are compelled to abandon during midsummer and midwinter; in midsummer, in consequence of the snow melting and pouring down through the roof; in winter, by reason of the ice belt along the land becoming so tho-

roughly solidified and widened as to render it inconvenient for them to reach the open water to the westward, upon which they are dependent for their food. In summer they live in seal skin tents pitched near the landing places of the Auk (*Wora Allar*). During midwinter they live in the before-mentioned snow houses. These houses are constructed of cubical blocks cut from a hard drift, and are from six to ten feet in diameter, and from five to seven feet high. They are placed either on a point of land projecting far out into the sea, or on the ice, near the open cracks. The walls of the hut vary from six inches to a foot in thickness; the cracks between the blocks are carefully filled with loose snow, and the entrance through a curved passage is closed on the inside by a large block of snow or a piece of bear skin. In one corner is placed such a lamp as I have already described. One-half of the floor of the hut is raised about a foot, on which they spread bear and seal skins. This serves them both as bed and sitting place.

The temperature of their huts ranges from zero to the freezing point, and is kept thus elevated, mainly by the heat radiated from the persons of the occupants; yet, with this seemingly unendurable temperature, they appear to live in comfort; the women performing all the necessary household duties, such as sewing, preparing skins for clothing, &c.; the men in making and repairing their implements for hunting. The outside temperature varies from thirty to seventy degrees below zero. No matter how low the temperature, provided the air is calm, they do not hesitate to shift their quarters as occasion may require, and with their families and domestic furniture upon their sleds they travel sometimes forty or fifty miles at a single march before meeting a favourable place for building another hut.

From these huts the men roam over the ice fields with their dog sledges in wild pursuit of the bear, or, slightly protected by a snow wall partly closing around them, they watch at the open cracks for the walrus and narwhal, or for the seal at their little blow holes. After being absent for days together, seeking rest and shelter by throwing themselves upon a piece of bear skin upon the ice, or if blowing in a temporary snow hut. Their clothing at this period consists of a bird skin shirt, bear skin pantaloons, boots, and mittens, dog or bird skin stockings, and a fox skin coat, with an attached hood covering the head. This coat is always taken off when entering the hut.

My object in dwelling thus minutely upon the habits of this people you will readily appreciate. Living virtually without fire, most meagrely dressed, dependent at the same time upon the hunt for every necessary of life, and almost daily exposed, in the pursuit of game, to the very lowest temperature, we are astonished at their complete indifference to the cold; not only do they seem indifferent to it so far as concerns their physical comfort, but they are able to resist all of its depressing influences. They are a strong, robust, and healthy race. Scurvy is unknown amongst them, and I have never known or heard of an instance of tubercular disease.

I think you will agree with me in what was stated in the outset, namely, that we must look for an explanation of this wonderful power of resistance in the quality and quantity of the food consumed. They subsist entirely upon animal food; the flesh, mainly, of the walrus, seal, narwhal, and bear, and the quantity which they eat seems really enormous. I have frequently seen an Esquimaux hunter, when preparing for the hunt, eat from six to twelve pounds of meat, about one-third of which was fat, and I should place the daily consumption of the men at from twelve to fifteen pounds; and, in this large consumption, they find their shield against the cold. This food is mostly taken raw, and in their long journeys they stop from time to time, unlash their sledges, and cutting off strips of frozen blubber eat them with apparent relish. I do not believe that they could live upon a vegetable diet.

The same laws govern the Esquimaux and white men, and just in proportion as we of the Advance accustomed ourselves to the diet of the Esquimaux did we gain power to expose ourselves with impunity to low temperatures. We found ourselves continually craving animal food, and especially fatty substances, which, to us in these latitudes, would be exceedingly distasteful. Frozen blubber became quite palatable, and during the second winter, when the temperature of the cabin was rarely above 45°, and often as low as zero, it was found necessary by Dr. Kane, in order to protect his men against the bad effects of the salt, to guard the slush barrels by the strictest orders.

The process of acclimation with us was gradual. I remember well how, in the autumn of 1853, we suffered intensely from temperatures which a year later produced no impression whatever upon us, and I am satisfied that this increased power of resistance was in direct proportion to our ability to eat and digest animal food. During a later period of the cruise, some of the party lived precisely the life of the Esquimaux during three winter months, entirely without fire for purposes of warmth, without suffering any serious inconvenience or discomfort from the low temperatures.

It is worthy of more than the mere passing remark, that the climate is one of unusual healthfulness, and that scurvy and phthisis are unknown among the natives. In relation to the last mentioned disease, I give the fact without comment or opinion; with regard to the former, I will remark that whenever it has occurred in vessels visiting the Arctic seas it has been mainly owing to accidental causes which experience has taught us to avoid. These are: salt food, cold, and the darkness of the long winter night, with the depressing, moral, and physical influences which it carries in its train, and, as an occasional exasperating cause, excessive exertion.

For the use of a salt diet there is now no necessity, and if we bear in mind the fact that whenever the crews of vessels wintering in the Arctic seas have been attacked with scurvy, they have subsisted invariably upon such a diet, we will at once perceive how all the above mentioned causes of

its development operate together to produce disease. In the first place, the salt meat is injurious in itself, and will not, in any climate, sustain the human body in health; and, in the second place, if it could be taken with impunity, so far as the salt is concerned, a sufficient quantity of it could not be eaten or digested to enable the system to ward off the depressing influences of the cold and the darkness. With a good and unlimited supply of rich fresh animal food, these last mentioned causes either have no actual existence, or are easily avoided. The cold only becomes a predisposing cause of disease, when the vital forces are not sustained by proper alimentation. The same may be said of the darkness, although there is, doubtless, a cause independently operating upon man as upon plants placed under similar circumstances; yet rich food, plenty of water, exercise, good ventilation even at the expense of temperature, and last but not least, a healthy, cheerful tone, will, in every case, counteract the ill effects of the long-continued darkness.

A most singular effect of the use of salt food was observed among the dogs. These animals had never been accustomed to such a diet. They could not eat it except in small quantities, and the salt of the meat, the cold and darkness, operating together upon their feeble bodies, developed a singular *epilepto-tetanoidal* disease, which ultimately destroyed nearly every animal which Dr. Kane took with him from Southern Greenland, or afterwards procured from the natives of Smith's Strait. The same was, from time to time, observable among the men, and, doubtless, for the same reason.

I have stated that the natives for the most part eat their meat raw, and having availed myself of the knowledge of this fact to great advantage, I would suggest it to my brethren of the profession. I have frequently found that when the stomachs of very scorbutic patients refused cooked meats, that they could readily retain the uncooked flesh, if frozen, or as our men expressed it, "cooked with frost," and in this state it seemed to antagonize more immediately the scorbutic condition. The operation of freezing destroyed entirely the repulsiveness of the raw flesh, and the walrus and seal meat which was found best suited to their wants, was very generally thus preferred by the sick. They often relished it, especially if acidulated with a little vinegar or lime juice, when they could take nothing else.

While fresh animal food, and especially fat, is absolutely essential to the inhabitants and travellers in Arctic countries, alcohol is in almost any shape not only completely useless but positively injurious; and in this view I am fully sustained by the well-qualified judgment and experience of our enterprising and indefatigable friend, Dr. Rae, whom we had the pleasure, not long since, of welcoming to the Academy. So well am I convinced of this fact, that, in the expedition now organizing to the Arctic seas, I shall not only not give it habitually, but will carefully guard against taking any one with me who is addicted to its use. Circumstances may occur under which its administration seems necessary; such, for instance, as great prostration,

from long-continued exposure and exertion, or from getting wet, but then it should be avoided, if possible, for the succeeding reaction is always to be dreaded; and, if a place of safety is not near at hand, the immediate danger is only temporarily guarded against, and becomes, finally, greatly augmented by reason of decreased vitality. If given at all, it should be in very small quantities frequently repeated, and continued until a place of safety is reached. I have known most unpleasant consequences to result from the injudicious use of whiskey for the purpose of temporary stimulation, and have also known strong able-bodied men to have become utterly incapable of resisting cold in consequence of the long-continued use of alcoholic drinks. I do not believe that it has a single useful property, not possessed in a ten-fold degree by other stimulants, and under this head I rank tea and coffee. So valuable are both of these that I am at a loss to say which is best. The English Arctic explorers almost invariably use tea, and so do the Russians; but Dr. Kane's parties, after repeated trial, took most kindly to coffee in the morning and tea in the evening. The coffee seemed to last through the day, and the men seemed to grow hungry less rapidly after taking it than after drinking tea, while tea soothed them after a day's hard labour, and the better enabled them to sleep. They both operated upon fatigued and over-tasked men like a charm, and their superiority over alcoholic stimulants was very marked. The virtue of coffee used under the above-mentioned circumstances I cannot over-praise, the only drawback to its frequent administration being the difficulty of preparing it, when the atmospheric temperature is low and the traveller is obliged to depend upon a lamp with which to melt and boil his water.

These facts I submit with comment, leaving for those better qualified to determine whether they throw any new light upon the highly interesting and important physiological questions which they involve.

ART. X.—*On Sunstroke.* By A. P. MERRILL, M. D., of Memphis.

THE remarks on sunstroke in the No. of this Journal for January last, by Dr. Levick, possess much interest to those who have had their trials with this formidable disease. He shows a similarity in the pathology of this and some other diseases with which it has often, no doubt, been confounded. Doubt appears to exist whether sunstroke be primarily a disease of the blood, of the vascular, or of the nervous system. The morbid qualities of the blood—*post-mortem*—are said to be such as exist in cases of death from other causes suddenly paralyzing the nervous system, such as a stroke of lightning. That the vascular system is embarrassed by local congestions appears to be conceded, but it would be difficult to show that this

is a primary condition. It would seem more probable, on the contrary, that the nervous system feels the first impulse from the acting cause, and every sensation of the patient indicates disordered innervation in the first instance, not unlike that which occurs in the cold stage of fever; and the subsequent reaction in cases of recovery, and the *post-mortem* appearances of those who die, are sufficiently like those of fever to justify a belief in a unity of effect. The influence of certain remedial agents, also, corroborates this view.

It is sufficiently evident in attacks of fever of violent grade, that the nervous energies are prostrated, causing congestion, and it has been sufficiently proved that relief may be obtained in this early stage of the disease by the use of those remedies which act most directly upon the nervous system. Thus opium, and, indeed, the whole tribe of narcotic plants, have been successfully used in the first stage of fever. And, perhaps, it is no disparagement to this view of the pathology of fever, that it has also been treated successfully, in this early stage, by both bloodletting and cold bathing; proving that the condition is not one of debility, but of temporary depression of vital power, causing stasis of blood. Although bloodletting and cold may, by their sedative power, hasten reaction, and thus afford relief to local congestions which threaten to extinguish life, they must always be considered hazardous remedies, because, if applied too suddenly and extensively, their tendency is to cause further depression of vital power, and produce death without reaction; and it is this danger, I apprehend, which has brought these remedies into disrepute in such cases.

That sunstroke is a disease of this nervous character I have long been persuaded, not only from the symptoms, but from the action of remedial agents; and the suddenly fatal effects produced by drinking cold water while the system is heated by exercise, appears to me to depend upon the same pathological condition. Opium, bloodletting, and cold bathing, have all been successfully used in these affections by many physicians, and by as many, perhaps, unsuccessfully; showing, perhaps, that the difference depends upon time, and manner, rather than upon a want of adaptation. But I think we have a remedy in chloroform, far superior to any or all these, for this dangerous condition of the system. It has the advantage, too, of being free from the objections to opium, on account of any subsequent influence upon the cerebral and digestive organs. It has also the advantage, in cases of insensibility, of being more easily administered. Pure chloroform poured into the mouth of a patient suffering from great prostration excites the organs of deglutition to action when nothing else will. My practice has been to give it in doses of a fluidrachm, and repeat it as occasion required; but my experience has not been sufficient to determine its true value in such affections, or the proper method of administration. These points can only be settled by more extended observations, and it is with a view to secure these that this paper is written.

ART. XI.—*Silver Ligatures and Sutures in a case of Amputation of the Mammary Gland.* By THOS. ADDIS EMMET, M. D., Assistant Surgeon to the Woman's Hospital. New York.

Mrs. Brenon, aged 31, of healthy parents, was admitted to the Woman's Hospital Feb. 17, 1859, with scirrhus of the breast.

She was below the average height, and by no means robust in appearance, with a slight figure, pale complexion, light brown hair, and blue eyes. The internal organs were found in a healthy condition. An examination presented a hard, irregular mass, occupying nearly the entire left breast, free from adhesions, and more extended to the left of a partially retracted nipple. There was no enlargement of the glands in the axilla, and the tumour was without pain except when bruised, or from its own weight when unsupported.

She was the mother of seven children, and at the time of admission was advanced nearly five months with her eighth pregnancy. The catamenia appeared for the first time just before marriage at 16 years of age. As an interesting fact, she stated that during the past nine years and a half, she had menstruated but once, being pregnant or nursing during the whole period. From childhood she continued in good health until the reception of an injury, some two years since. While reaching out of a window, she lost her balance, and in recovering herself she felt something rupture in the gland—or snap, as she expressed it. She became faint and suffered exceedingly from pain for a short time. Much inflammation and enlargement followed; her physician, supposing it to be an abscess, lanced it, but only a few drops of blood escaped. The enlargement subsided after some five weeks, and she then noticed for the first time a movable lump about the size of a filbert, to the left of the nipple. Only while in the act of nursing (from throbbing and shooting pains towards the axilla) did she experience any inconvenience, and the size remained stationary. She was obliged to wean her child, which had been previously healthy, but had not thrived since the reception of the injury. The seventh pregnancy resulted almost immediately afterwards, and no increase in size took place during either gestation or the following lactation. The eighth pregnancy occurred in November last, and she still continued to nurse her child (which had been delicate from birth) until the latter end of December, when it died. On ceasing to nurse, the tumour rapidly enlarged, and was a constant source of pain from the slightest injury. The patient was exceedingly anxious for its removal, but in consequence of her pregnancy, it was a question in consultation whether the operation was justifiable until other means had been resorted to. She was placed on a tonic and alterative course of treatment, with a good diet. As the attention of the profession had been recently drawn to the use of compressed sponge in such cases (by Dr. Batchelder before the Academy of Medicine[1]) this was deemed a fair one to test its merits. On the day after admission, a compressed sponge (rather larger than the tumour) was bound into place by a bandage, and through an opening made, water in small quantities was injected, so as to produce its gradual expansion. After a few days it was noticed that rapid absorption of the cellular tissue was taking place, while the tumour apparently was increasing in size, and nearer the surface. A fresh sponge being daily substituted, this continued pressure was persevered in for nineteen

[1] Also see May No. of the New York Journal of Medicine.

days, and anodynes were freely used. At the end of this time, there scarcely remained tissue enough for a flap from adhesion of the integument to the tumour, and the glands in the axilla were enlarged. The patient's general condition was much lowered, in consequence of constitutional irritation resulting from pain by pressure.

After a few days' rest, on the 10th of March last (at half past two, P. M.) the patient was placed under the influence of chloroform, and the whole gland was removed in the presence of Drs. Mott, Sims, Mott, Francis, Scudder, and others. It was deemed advisable to leave the removal of the axillary glands for a subsequent operation if necessary, for their enlargement was regarded as resulting from the use of the compressed sponge. The incisions were made more transverse to the body and not towards the axilla, as is the usual operation. This was done to allow of perfect drainage in the recumbent position, in case of slight hemorrhage or formation of pus. The vessels were found unusually large both in size and number, and eleven were secured by means of fine silver wire. An artery being elevated on a tenaculum, the wire was passed around, and with an end held in each hand, they were then crossed and drawn tight, the first turn in the twist being made close to the vessel. The ligatures were then cut off as short as was deemed secure, and left to become encysted. Although simply twisting the ends of the wire is the usual mode adopted in any operation, the attempt here was first made to tie the ligature around the vessel, but failed, in consequence of more force being required to form a compact knot than the strength of the wire would admit of. Contrary to direction, the patient had taken a hearty meal before the operation, and vomited freely. From this delay, and fearful of hemorrhage, she was continued partially under the influence of chloroform for nearly an hour before the wound was finally closed. This was effected by a continuous whip stitch of silver wire, each over turn being passed through about half an inch from the edges and within a quarter of an inch of its fellow. The needle used was a short, straight one, directly armed, and as each over turn was made, the edges were drawn permanently in contact. The passage of the needle was much facilitated by using a blunt hook or tenaculum held on its flat side near the exit, as a point of resistance. By Dr. Sims' advice, this form was adopted as bringing the edges in contact throughout with greater accuracy than could be obtained by a succession of interrupted sutures. The further progress of the case showed that its success resulted in a great measure from this method, as it prevented unequal traction at any one point. It was more tedious, but answered admirably the end in view, leaving a continuous line of apposition. The wound thus closed was nine inches and a third in length. No adhesive plaster or any other dressing was used, except a wet compress retained by a bandage loosely applied. With the accelerated pulse after the use of chloroform, her condition remained comfortable until midnight, when slight rigors came on followed by fever. As the ward was crowded and very warm, she was moved to another room without fire. Complaining of pressure, the bandage was removed, and an enema of beef tea, with two drachms of tinct. opii was ordered. About three o'clock, A. M., with a pulse of 107, fluctuation was detected at the lower angle of the wound. Several turns of the suture at this point were divided, and the already adherent edges separated with a probe; about an ounce of blood (extravasated likely by moving her after the operation) thus escaped.

March 11th. 9 o'clock A. M.—Pulse 120; skin warm; ordered liq. am. acet.; spts. am. aromat., and morph. acet. in combination, together with beef tea. At three P. M., pulse 100, and condition more comfortable.

12*th*. 9 o'clock A. M., had a good night, pulse 100. Continued the same treatment. No change at 3 o'clock P. M. Separated the edges of the dependent angle, and allowed two or three drachms of thin bloody pus to escape. Continued the water dressing.

14*th*. Pulse natural. Introduced a tent into the lower angle, for the purpose of keeping it open, and directed the same to be removed several times a day. Union had taken place nearly throughout, and a probe could not be passed for any distance under either flap without breaking up adhesions. Ordered tinct. ferri chloridi gtt. xv three times a day, with lager beer.

16*th*. The patient was anxious to get up, and could not understand the necessity for keeping the arm on that side at rest.

18*th*. Found the suture midway, partially torn out from the upper flap. As the line of union at this point was nearly at a right angle to the fibres of the pectoralis major muscle, every movement of the arm from the side placed the parts on the stretch, as soon as adhesion began to its surface. It was also at the point of greatest deviation in the lines of incision, and where, consequently, the most traction was exercised in bringing the two edges together. There was no cutting out by progressive absorption, as in a silk ligature, but the result of violence, and it is doubtful if one, however large, would have answered better, although the wire in use was of the smallest size.

21*st*. Stopped all dressing; the patient sat up through the day, it being the eleventh since the operation. Several short strips of adhesive plaster were used as a means of precaution, although the edges of the fissure were not more than a line apart in the centre, and less than an inch and a quarter in length.

25*th*. The line of separation had not increased; the fissure was nearly healed by granulation, and the union complete at every other point. The patient's general health and condition was most decidedly improved.

April 1. No further local treatment was deemed necessary, but continued the use of tonics.

11*th*. Was discharged from the hospital, having been retained to watch the effects of the suture. No irritation resulting, as an experiment it was decided to let it remain until after delivery.

23*d*. Returned to have the suture removed, as a number of the loops (on a return of the parts to health) were left prominent, and caused inconvenience and pain, from the pressure and friction of her clothes. This was done on the forty-third day after their introduction. With a most careful examination it was impossible to detect the position of a single ligature; they had become encysted, and the future must determine if they will remain so.

The advantages of silver wire, as claimed by Dr. Sims for its introduction in general surgery, presented in this case all that could be asked for. It hardly admits of question, if the same result (under similar circumstances) could have been obtained by the use of silk. By thus securing the vessels and closing the wound, union by the first intention was obtained nearly throughout. The slight oozing of pus for several days after the operation was scarcely in any degree from irritation of the ligatures, but in consequence of the death and separation of the portion of tissue strangulated by them. As soon as the effects of the chloroform, and the shock of so serious an operation had subsided, the patient began rapidly to improve,

and continued to do so. With the drain established by the seton effect of eleven silk ligatures, and the resulting union by granulation of so large a surface, in a crowded hospital, the same result could not have been hoped for.

It is exceedingly doubtful if the edges could have been brought together by means of interrupted silk ligatures at all, and if so, they would have rapidly cut out. From the difficulty of keeping the arm at rest, until adhesion throughout had taken place to the surface of the muscle, it is questionable if a more severe test of the value of the silver suture could be presented in surgery. As a saving of time and labour to the surgeon, in the subsequent treatment of a case, no comparison exists in the use of either silk or animal ligatures. And finally, the experience of its introducer has proved, that when the wire is made from virgin silver and annealed, it is superior by possessing in common all the advantages, without any of the objections to other metallic ligatures.

Note.—June 6th. Mrs. B. has advanced to within a few days of her confinement. Perfect restoration to health has taken place and the enlargement of the axillary glands entirely subsided. The cicatricial line has contracted to six inches and a quarter in length and the parts are free from pain on pressure at any point.

73 MADISON AVENUE, N. Y.

ART. XII.—*Supposed Encephaloid Testicle; Hermaphrodism.* Communicated to the Boston Society for Medical Improvement and to the American Journal of Medical Sciences. By J. MASON WARREN, M. D. (With a wood-cut.)

THOMAS MARTIN, 21 years of age, applied to me in April, 1859, on account of a great enlargement of what appeared to be the right testicle. His external appearance was that of a young working Irishman. The beard was full, strong, and black; the larynx was of the ordinary size, and the voice masculine; the shoulders were broader than the hips; the muscles were well developed; no fat; height sixty-five inches, of which thirty-three were above the pubis, and thirty-two below.

His own history of the case was as follows: Early in life he lost, or had had removed, the left testicle, but could give no particulars of it. The right testicle was greatly enlarged, measuring thirteen inches in circumference, seven and three-quarters in length, egg shaped, and it extended nearly two-thirds of the distance from the pubis to the knee. It was excessively tense, hard, and seemed too heavy to be supposed a hydrocele, although the great evenness of its surface would seem to make such a supposition probable. Some very large veins ran over its surface under the skin. The spermatic cord seemed well defined above the tumour, though a little harder than natural. He complained of considerable pain in the back and loins, which was attributed to the dragging weight upon these parts. The pain in the

testicle itself was not excessive. The testicle had been, he says, of normal size till about a year since, when he received a severe kick upon it. After the first acute symptoms had subsided, it then commenced to swell slowly, but within the last month it had increased very rapidly. The sexual feelings and power of erection continued natural till about six weeks ago, and since then they have completely disappeared. He has never had sexual intercourse, and there is some doubt whether he ever had seminal emissions. About a month since, both breasts began to swell and become painful, and upon examination I found them to be of the size of those of a young female; the glandular structure could be distinctly felt, and the disk was about four inches in diameter. No fluid issued from them on pressure. I could not learn from him whether they had previously been larger than natural, but the present increased size seemed to have corresponded in time with the loss of sexual desire. He stated that his health was failing, he had lost his appetite, and was desirous of an operation to relieve him from suffering.

Being friendless, I advised this patient to enter the Massachusetts General Hospital, where the testicle was removed on Wednesday, April 13th, and the cord tied *en masse* near the abdominal ring, some dissection being necessary in order to reach the cord above the disease. Previous to the operation, he had been excessively diffident about having the genital organs examined, and at this time the following appearances were first remarked. The glans penis appeared normal but imperforate; the body of the penis was from two to three inches in length. Commencing about an inch from the glans and extending to within two inches of the anus, was a fissure having on each side two flaps of delicate epithelium, exactly resembling the nymphæ, which, being separated, presented, as it were, the external organs of the female. At the lower part of this fissure commenced apparently the urethra, and an instrument being introduced about three inches, water escaped freely. External to the fissure, the skin was thin and delicate, like that in the neighbourhood of the female organs of generation. The pubis was very fully covered with hair, which was shaved to facilitate the dressing after the operation. Dr. Dyer, house-surgeon of the Hospital, at my request took a cast of the breasts, their appearance was so unusual. My inquiries would have been much more particular in regard to his previous history, and especially as to anything resembling the menstrual discharge, if I had had the slightest suspicion of the subsequent manifestations.

The day after the operation he complained a great deal of pain in the abdomen and much fever, also of thirst, which was partly attributed to the ether administered. The febrile action gradually increased from day to day, the swelling and pain in the abdomen, however, subsiding until his death, which took place on the seventh day from the operation. On the day of his death, he drank by mistake a quantity of laudanum left as an external application, and which he took for brandy, but as soon as discovered by the house-surgeon, it was evacuated from his stomach by an

effervescing dose of saläeratus and vinegar, and so far as could be perceived, produced no symptoms.

An examination of the body was made on the following day. Both lungs were found studded with large masses of cancerous matter, and were adherent at certain points to the pleuræ. The liver at first appeared healthy, but on being cut into a number of cavities were discovered about the size of a filbert, containing a thick, milky fluid. On the spine, at the root of the mesentery, was a mass of enlarged lymphatic glands, the chain of them extended down from the edge of the rim of the pelvis nearly to the groin, much flattened, and not perceptible through the walls of the abdomen. The cord in the neighbourhood of the ring, just above the spot where the ligature had been applied, was in a gangrenous condition. The intestines being removed, exposed the following remarkable appearances in the pelvic organs: The bladder was somewhat distended, and just behind it lay a well-formed uterus of natural size, as in the unimpregnated state. On the left side of the uterus the Fallopian tube terminated in its fimbriated extremity, under which lay the ovary, rather smaller than natural, and with one or two little bands of adhesion running between it and the Fallopian tube. The ovary being incised displayed its ordinary structure. On the right side, the tube ran along under the peritoneum, turned upwards, and was lost in a diseased mass in the right groin. The parts were now removed with great care from the pelvis by Professor J. B. S. Jackson, who fortunately happened to be present with his class, and assisted at the examination.

All the pelvic organs being removed and placed on a table, we proceeded to investigate the relation of the different organs. A probe was passed into the urethra, and went readily into the bladder; being withdrawn and depressed a little, it passed with equal facility to the fundus of the uterus. The parts were now turned over, and the back of the vagina and uterus laid open. The vagina which commenced about an inch from the external orifice, was nearly four inches in length, and terminated in the os uteri, which, however, did not make much of a relief in the vagina, although the distinction in the two textures was fully marked. The arbor vitæ was very distinct and beautifully shown; it extended nearly up to the fundus of the uterus. The blowpipe being introduced into the left Fallopian tube, air passed freely through it and out of the fimbriated extremity. A probe could be passed for a certain distance freely into the right Fallopian tube, but air did not pass through it as in the other.

In regard to the tumour removed, the whole substance of it seemed to be converted into encephaloid matter, and its natural structure lost. The tunica vaginalis was adherent, except at its anterior part; it was cut into early in the operation, and about a gill of yellow-coloured serum escaped, exposing on the upper part of the organ a collection of most beautifully coloured cysts of all sizes, like a mass of most brilliant crystals.

It would have been extremely interesting in this case to have decided whether menstruation had ever taken place through the urethra, but this, unfortunately, I had no means of determining.

The organs being given to Dr. Hodges, the Demonstrator of anatomy to the College, for the purpose of a more minute dissection and investigation, he has kindly furnished the following report:—

"*Pilous development* that of a male. *Penis*, which is that of an adult, and not of a youth, measures along its dorsum two and a half inches. The glans, of proportionate size, is covered, except in the immediate vicinity of where the frenum should be, by a well-developed prepuce. The urethra being cleft from the meatus backwards, the prepuce is not completed underneath, but becomes lost in the sheath of the penis.

The *urethra* is traceable, along the under surface of the penis, from the meatus $3\frac{1}{4}$ inches, and disappears in an orifice $2\frac{3}{16}$ inches in front of the anus. Throughout this distance it consists only of a fissure or sulcus, the sides of which having irregular borders are in apposition. It is lined with well characterized mucous membrane, and has at various points distinct lacunæ.

Diverging obliquely upwards and outwards from the sides of the urethra are folds of integument, constituting distinct *labia major* and *minora*. On the left, at the side of these labia, are indistinct marks of cicatrices.

Examined internally, the penis consists of two *corpora cavernosa*, measuring from the meatus to their bifurcation 4 inches. They terminate in well-marked crura, and the nerves, arteries, and veins of the dorsum of the penis have the usual size and position. The *corpus spongiosum* is well developed, but split longitudinally into two halves, which are to be seen on either side of and behind the corpora cavernosa, and correspond externally to two folds which form the labia minora.

Cowper's glands were not found.

The muscles of the perineum were somewhat confused, but the following were distinctly made out: *erectores penis*, *compressores urethræ*, *levator* and *sphincter ani;* anterior to the latter was another elliptical sphincter muscle, corresponding, probably, to the *sphincter vaginæ*. The *transversus perinei*, as such, was not made out.

The *bladder* is of ordinary size, but its muscular development is greater than usual. It has two *ureters*, normal as to their entrance and otherwise. From the internal orifice of the bladder to the "vagina urethralis" it is $1\frac{1}{4}$ inch. Laid open along its anterior surface, its neck is embraced by a bi-lobed prostate gland of about half the natural adult dimensions; posteriorly to this the neck is thickened, and the section is as through a structure resembling the prostate. On squeezing the prostate, its secretion is seen to issue through several apertures on each side of the urethra, where the prostatic sinus usually exists. There is no verumontanum, but where it should be, and where the sinus pocularis would be found, the urethra and vagina blend, and a probe inserted and passed backwards enters the vagina; passed forwards, it appears externally at the orifice in front of the anus. Behind the bladder are found the uterus and vagina. On dissecting up the bladder from the vagina, as far down as the prostate, no *vesiculæ seminales* are to be found.

The uterus and vagina are $5\frac{7}{8}$ inches in length. The uterus, $2\frac{1}{2}$ inches long and $1\frac{1}{16}$ inch wide at its widest part, consists of fundus, body, neck, and os. The neck has unusually well-marked arbor vitæ. Just with-

in the os the mucous membrane appears abraded. The body has a triangular cavity, into which the Fallopian tubes enter by large orifices. The *vagina*, $3\frac{3}{8}$ inches long and $1\frac{1}{4}$ inch wide, is rugous, especially near its termination anteriorly, and has distinct columns. Anteriorly it contracts to terminate in the canal common to it and the urethra, and at this point has a sufficiently well-marked hymen.

The Fallopian tube of the right side permits air to be blown through its whole length. Near its termination in a fimbriated extremity, it becomes a little convoluted and dilated. Its length is $3\frac{7}{8}$ inches. At a distance of $2\frac{1}{8}$ inches from the uterus, and in its usual position, is an *ovary* with a lobulated surface.

The broad ligament on each side exists as in an ordinary female uterus. On the left side the round ligament is to be seen diverging from the broad and pursuing, so far as traceable, the usual course which it would pursue under ordinary anatomical conditions. On the right side the Fallopian tube admits the passage of air only for a certain distance. Near the uterus it is of large size, but it soon diminishes and becomes smaller. It is traceable to the point at which the "cord" of the tumour was divided, and is accompanied by the round ligament in its whole distance, no appearance indicating the usual divergence of it from the Fallopian tube on the anterior surface of the broad ligament. No ovary is found on this side.

The *rectum* lies behind the uterus, and is in all respects normal.

Dr. Ellis, Microscopist to the hospital, gives us the following results of his investigation.

Examined with the microscope the breasts were found to be composed of fibrous tissue, and a few small nuclei. No lobules were seen.

The mass removed before death consisted of two parts, the largest of which was rounded and solid; the other was composed of cysts. The former was $4\frac{1}{2}$ inches long, $3\frac{1}{2}$ wide, and $2\frac{1}{2}$ thick; the latter two or three inches in diameter. On close examination, nothing like a vas deferens could be found, but at one part were a number of parallel bloodvessels.

Remarks.—The internal organs in the case we have been considering seem evidently to belong to the female sex with the exception of the prostate gland. The importance of this as connected with the male sexual organs has diminished in the eyes of distinguished philosophical anatomists who have lately written on the subject, being considered as much an appendage to the urinary organs as to the sexual. We, therefore, with some difficulty account for the impetus given to the external male organization, beard, larynx, penis, and general masculine formation of the body; and the views we have entertained in regard to the effect of the sexual organs on the external character, seem to be very much disturbed by the present case. It might be very interesting to trace the analogies between different organs in the male and female systems, which are suggested in this instance, but we will refer to the very thorough and interesting paper of the distinguished Professor Simpson, of Edinburgh, on hermaphrodism, in the second volume of his obstetric works, edited by Dr. Priestly, of Edinburgh, and our talented townsman, Dr. Horatio R. Storer, where this whole subject has been most fully elaborated, and we may almost say exhausted.

The drawings which illustrate this case were originally made of the natural size of the parts, by Dr. L. Manlius Sargent, so distinguished for the accuracy of his delineations of anatomical specimens, and could they be exactly copied would answer fully as well as an actual inspection of the parts.

It may not be considered inappropriate to append to this case the following, reported by me to the Boston Society for Medical Improvement, in May, 1857, and extracted from their records :—

"The subject of this very uncommon deviation from nature, was 25 years of age, born in Maine, of healthy parents. He was by occupation a sailor; and the appearances to be described were only discovered when brought to the prison, where, on being undressed to put on the prison clothes, he was thought, from the large size of the breasts, to be a female in disguise, and was, therefore, transferred to the surgeon of the institution, Dr. Morris, for examination. On my visit to his cell, he seemed to have no objection to having an examination made, when it was explained to him that it was for a scientific object.

"Beginning with the face, the features are soft, and the expression mild; there is no beard. The neck is of medium size and length, but rising toward the back, as in the female. The shoulders are sloping, round and smooth, the muscles not being prominent. The upper extremities are delicate, and the hands small. The breasts, which are the most striking feature in this person, are large, well developed even for a female, quite handsomely formed, with large blue veins running over them, as in a nursing woman; the nipples being large, with a large, dark areola. The abdomen is quite prominent; the navel deep; the hips very broad, as in the female. There is a small penis. The scrotum and testicles are very small, the size of the latter being that of a bean. The legs are short, the middle of the body being, by measurement, half way between the umbilicus and the pelvis, instead of being, as in the male, at the pubic region. The voice is masculine; the sexual propensities normal.

"The interesting and remarkable feature of this case is the fact of the small male organs of generation implanted on a body almost entirely female. Cases constantly present themselves to the observation of medical men of malformed genital organs, having the appearance of a combination of the male and female; also of men with a large mammary organ. In this case there can be said to be no malformation."

EXPLANATION OF PLATE.

A. Right corpus cavernosum penis. B. Crura penis.

C. Skin where it turns up over pubes. D. Glans penis.

E. Distal extremity, or commencement of hypospadias. F. Triple row of nymphæ.

G. A bristle inclining forwards, passing through the aperture at the proximate extremity of the hypospadias, and then coming out in the urethra directly in front of prostate gland.

H. A bristle passing in at the same orifice, and coming out at the entrance of vagina close to the hymen.

I. Hymen.

J. Vagina slit open posteriorly, showing longitudinal and transverse rugæ.

K. Neck of uterus, showing the arbor vitæ.

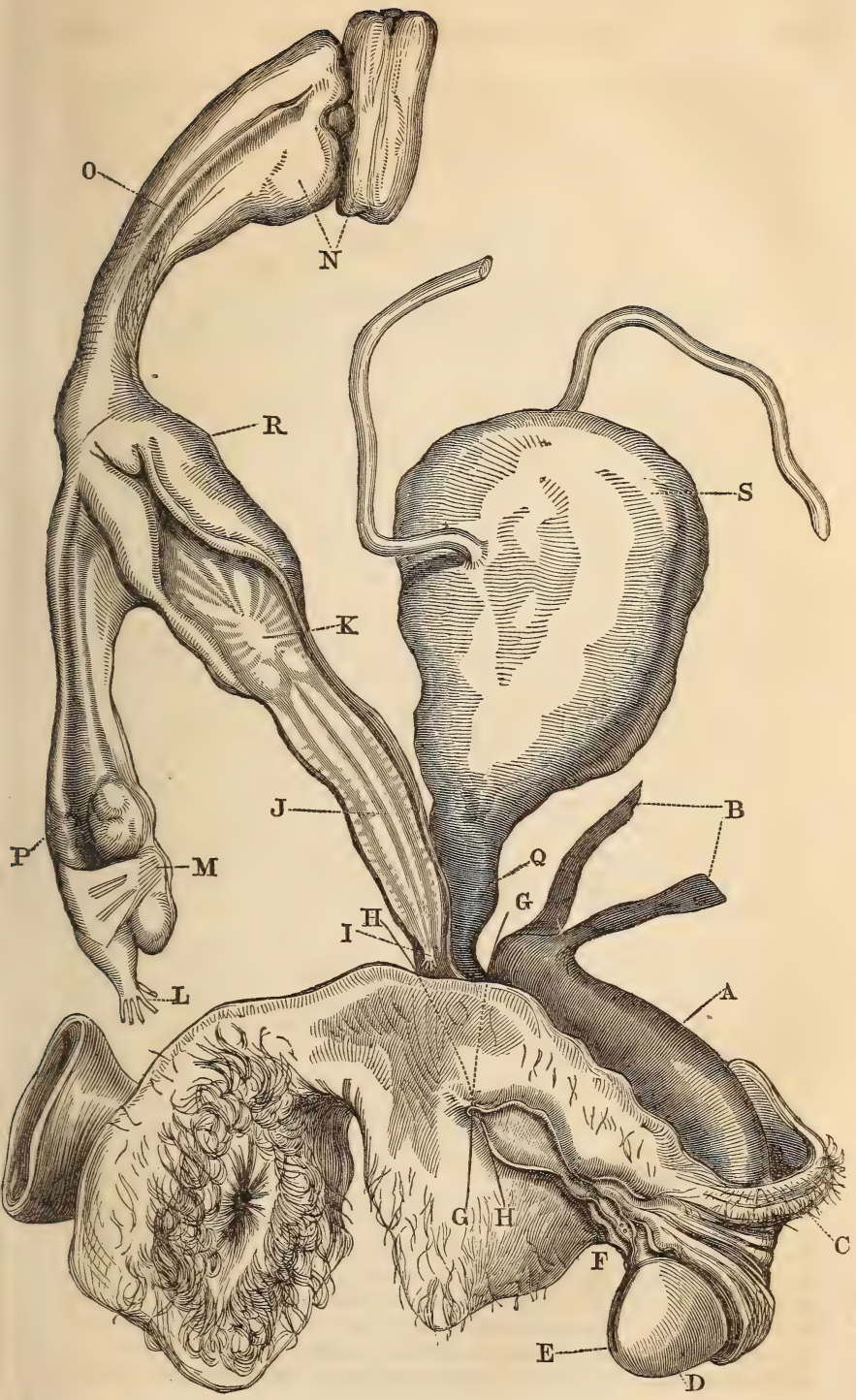
L. Fimbriated extremity of left Fallopian tube. M. Left ovary.

N. Diseased mass on right side, corresponding with left ovary and Fallopian tube.

O. Right Fallopian tube, partly impervious.

P. Left Fallopian tube, at the beginning of its trumpet-shaped extremity.

Q. Prostate gland. R. Uterus. S. Bladder with ureters.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REVIEWS.

ART. XIII.—*Outlines of Physiology.* By JOHN HUGHES BENNETT, M. D., F. R. S. E. Professor of the Institutes of Medicine, &c., in the University of Edinburgh. Edinburgh, 1858.

THIS book, as its name implies, is simply a treatise on the "Outlines" of physiology. But even the outlines of a science, which by continuous expansion has reached the extent to which physiology has at present attained, cannot be regarded as a subject easily exhausted. Dr. Bennett has, however, treated it very successfully, in a duodecimo volume, of 247 pages; giving in this space a short but well written and suggestive introduction on the doctrine of life and the generalities of physiology; a division on histological physiology, or the physical properties and functions of the anatomical elements and tissues; one on normal or healthy physiology; and one on pathological physiology. This can, of course, be done only by adopting an exceedingly careful and condensed manner of writing, by confining the author's statements almost exclusively to the results of scientific investigation, leaving out of the question the means by which they have been attained, and by touching upon the prominent points of the subject, without noticing in detail its minute divisions, or following the inequalities of its surface. Dr. Bennett employs, accordingly, a purely didactic style, eminently suitable for his purpose, but, of course, adapted to none other. Some striking examples of this literary and scientific compression may be found under the heads of *Mastication* and *Insalivation* (pp. 57 and 58), and under that of *Excretion from the Skin* (p. 95), though it may be recognized distinctly enough on almost every page of the book.

Notwithstanding the narrowness, however, of his self-imposed limits, as to space, the author is even more comprehensive than usual in regard to his subject; for the physiology of which he gives the outlines is not physiology "pure and simple," but includes, as we have mentioned above, not only the study of minute anatomy, and the properties of the tissues, but general pathology as well, or, as he calls it, Pathological Physiology.

"Histology, physiology, and pathology," he says, "are closely allied, and are only different divisions of the same subject; the facts of one are available for the study of all; and any theory deduced from this branch cannot be correct unless in accordance with the data furnished by the others. We shall, therefore, employ the term physiology in the enlarged sense of comprehending the doctrine of life, whether in health or disease."

This union of physiology and pathology, which is unobjectionable and even advantageous, when the nature of both are fairly understood, has, we think, been sometimes productive of mischief. The expression of our author that "the facts of one are available for the study of all," must be taken in a very limited sense. If we endeavour to arrive at pathological facts by induction from physiological ones, or *vice versâ*, as has been too

often attempted, we shall certainly go wrong, and mystify ourselves with a logical "inconsequence." For the very essence of a pathological condition is that the functions are different from those in health, and that their results are different also. Simple as the statement of this truth appears to be, it has certainly been forgotten, more than once, by writers on both subjects. Because the epidermis is exfoliated, as one of the sequelæ of certain fevers, it has been assumed that it suffers a similar continuous exfoliation during health; and because the blood-globules are diminished in scurvy and chlorosis, it has been supposed that they also undergo a constant destruction in the physiological state. Nothing, of course, can be more unfounded than such an inference, since the very points in which the two conditions differ are relied upon to establish a resemblance between them. It should always be borne in mind, therefore, that while the *nature* of the physiological and pathological phenomena is the same (endosmosis, exosmosis, sensibility, reaction, &c.), the *phenomena themselves* are different; and the demonstration of specific facts, accordingly, in the two departments, must rest on separate and distinct grounds. We believe that, in nine cases out of ten, where a morbid condition is spoken of as the "exaggeration" of a natural one, the expression is, strictly speaking, incorrect. The vascular excitement and irritability of fever have no resemblance, either in degree or in kind, to the natural flush of healthy exercise; and inflammation of a glandular organ has certainly no relationship with the state of physiological congestion, which it presents during the performance of its normal function.

While the physiologist and pathologist, however, should carefully separate the study and demonstration of particular facts in the two departments, there is no reason (except in the enormous extent to which each has been developed) why these departments should not be cultivated simultaneously, and in connection with each other. We fully agree with Dr. Bennett that the doctrine of life, in its widest sense (*biology*, as it is now called), properly includes the morbid as well as the normal functions and phenomena of the living body. Viewed, indeed, in a purely scientific light, disease is a perfectly natural phenomenon, as well as health. The philosophical doctrines of Mr. Geo. Combe, will not bear the practical examination of the physician and the naturalist. Disease, in any particular case, appears to be an accidental occurrence; pneumonia produced by imprudent exposure and wet feet, or cirrhosis, as a consequence of late hours and hard drinking. But it needs only a moderately extensive acquaintance with nature and her operations, to see that disease in general is not dependent on fortuitous causes, but is an essential and natural element in the life of man. The body is so framed as not only to perform certain healthy functions, but so as to be liable, in addition, to certain morbid derangements; and these derangements, or the liability to them, are just as much a part of the natural organization of the body, as its power of performing the healthy functions. When disease occurs, therefore, it is to be attributed quite as much to the natural constitution of the body, as to the particular exciting cause which called it into activity; for it is produced by the necessary reaction of the organism against a morbid stimulus, as the healthy functions are the consequence of its reaction against a natural one. The same thing is still more evident when we recollect the long list of hereditary diseases, and of those which, depending on congenital predispositions, come into activity, with more or less certainty, at particular periods of life. Contagious and miasmatic fevers, contracted unconsciously in the rounds of ordinary social intercourse, or in visiting unknown localities, result inevitably

from the operation of perfectly natural causes. The lower animals, often erroneously asserted to be exempt from human faults and infirmities in this respect, are in reality subject to diseases, as every one knows who has charge of them, less numerous and varied, no doubt, than those of the human subject, but perfectly well defined, frequently peculiar to certain species or families, and sometimes identical with those which affect man. Excrescences, blights, and malformations, existing even in vegetables, show that diseased or abnormal action is not confined to the animal creation, but plays its part, as an occasional phenomenon, throughout the entire range of organized beings. The science of life, if complete, must therefore include it, as well as physiology proper.

In the first division of his subject, the author passes in review the ultimate anatomical constitution of the animal fluids and tissues, giving, in a few words, but in a clear manner, the general characters of molecules, granules, cells of various kinds, fibres and tubes. He gives in full, the "cell theory of organization," as first developed by Schwann and Schleiden; a set of ideas which answered a good purpose in its time, by connecting the most prominent and interesting facts, relating to the subject, in a regular order, but which hardly represents with fidelity the present condition of minute anatomy, as it is understood by most microscopic observers. The "cell theory" should be employed, we believe, as a convenient, though somewhat arbitrary *classification* of minute anatomical forms, rather than as descriptive of actual transformations undergone by them in the process of growth. We cannot be sure, because cells of two different forms are found in contiguity with each other, or cells and fibres mingled, that a transformation or transition takes place from one form to the other. They are more frequently found, on continued observation, to be independent of each other, so far as regards the manner of their production, and associated only by the natural constitution of the tissue of which they form a part.

The author gives, in connection with the description of the tissues, a concise account of the physiological properties belonging to them, as tissues, and to the elementary forms of which they are composed. To molecules is attributed the first part, in order of time, in the formation of the tissues, these minute bodies coalescing, under the influence of development and nutrition, into nuclei, cell-substance, membranes, &c. The special function of the blood-globules is declared to be "the further elaboration and preparation of the *liquor sanguinis*." The glandular and secreting cells are credited with their inherent power of selecting the materials which are to transude through them from the blood, or to originate in their substance; and the irritability of the muscular fibres, as well as that of the nerve tubes, receives appropriate mention. This portion of the book terminates with a *resumé* of physiological chemistry, of the general properties of living beings, their physical and vital phenomena, and a short exposition of the nature and relations of the physical and vital forces.

The definition of *life* alone has always given endless trouble to those who have attempted it. Witness the numerous clumsy phrases, invented by various writers, most of which are utterly unsatisfactory, while no one of them does its work as completely as we could wish. "The sum total of the functions which resist death;" "The constant uniformity of phenomena with diversity of external influences;" "The special activity of organized bodies;" "Organization in action," &c. &c. The point in which most of these definitions fail of giving satisfaction, is that they nearly all

speak of life, in some way or other, as consisting only in the phenomena presented by organized bodies, and not as the hidden force from which they spring. Many of them take pains, indeed, to deny the existence of any such internal force, and regard the visible actions of a living body, its various functions and processes, as being, simply and literally, nothing more than an aggregation of different phenomena dependent on the constitution and properties of the different tissues and organs. An animal, in their view, is an organized structure, in which the muscles contract, the lungs breathe, the nerves feel, and the glands secrete; and nothing more. For them, there is no individuality in the compound life of an animated being. It is merely an agglomeration of parts and functions, the continued performance of which depends upon the peculiar manner in which they are linked together in the physiological condition. Death, accordingly, results from the accidental derangement of one of these functions, the others becoming arrested afterward, in consequence of their mutual connection. Thus, if the trachea be tied, the blood becomes vitiated from deficiency of oxygen, the senses are clouded and the consciousness destroyed, and, the impure blood stagnating in the capillaries, it no longer returns to the heart which, of course, ceases to beat when it loses the necessary stimulus of a constantly returning current. If the animal be destroyed by breaking up the medulla oblongata, it is only that the stimulus to respiration is taken away, and the other consequences follow, in order, as before. Those who adopt the above definitions would therefore regard the termination of life exactly as the stoppage of a complicated machine, in which the breaking of a strap, or the insertion of a foreign body between two cog-wheels, should arrest, in consequence, the motion of pistons and levers, the working of air-blasts and water-pumps, the revolution of magnets and the excitement of electric currents.

There is, on the other hand, a strong tendency with some minds to believe in the existence of some central force, or intangible property, in the living organism, which presides over this association of functions, and which is lost at the time of death. It is difficult to look at the body of an animal, suddenly killed, and not to imagine that it has lost something which it possessed a moment before. The stoppage of the animal machine, it is true, depends on some mechanical or chemical derangement of its parts, and its want of power to begin again is owing to the peculiar mingling and intertanglement of their mutual dependencies. So that, though the disturbing cause may be temporary in its duration, its effects are permanent. If you once put out the fire (which by its own heat maintains its own combustion) the instant afterward it is incapable of relighting itself, though the carbon be still there, and the oxygen as abundant as ever. But they will no longer unite, because the *heat* is wanting, which is necessary to effect their combination. Even here, therefore, something has actually been lost, in the stoppage of combustion; an intangible and undefinable force, it is true, but still one which is essential to the production of the physical phenomena, and which, when once allowed to escape, cannot be recalled. Such is the power, or force, supposed by some to reside in the living body, and called by the name of Life. It is clear that, understood in this sense, the word means much more than the assemblage of certain peculiar phenomena. The phenomena are only the signs of its manifestation, and it may continue while they are in abeyance, as in cases of syncope, and the dormant condition of seeds and ova.

We believe that there is some foundation for the view last mentioned,

and that our instinctive perception of an internal principle of vitality is not a mere artifice of ignorance and self-deception; but that we express by it a similar idea to that of the physicist when he speaks of the force of gravitation as belonging to matter, or the force of magnetism as residing in an iron bar. As Dr. Bennett justly remarks, we are as ignorant of the true nature of physical as we are of vital forces, and it is only from their effects that we can know either of them. The term life, therefore, if it be taken in this sense, is one of those words which are incapable of definition, because its manifestations are so varied, while its nature is unknown.

Dr. Bennett begins the subject of normal physiology with the function of nutrition. This function he defines, as we think, with great propriety, as including the introduction into the stomach of alimentary material and its digestion, the formation of the blood, the changes of respiration, the exudation of nutritive fluids into the tissues and formation of secretions, the retrograde metamorphosis of the tissues and their reabsorption into the blood, and, finally, the discharge of the excrementitious substances from the frame.

"We believe," he says, "that it is only by understanding nutrition in this enlarged sense, that we can obtain a correct explanation of the dependence of one process upon another, as well as of those important affections which may appropriately be called diseases of nutrition."

All the processes enumerated above are in fact so closely connected with each other, that one appears to follow necessarily in the train of its predecessor; and in the natural course of study, they are certainly to be grouped in company with each other. The author describes the important properties of the various alimentary substances, and the part which each is supposed to play in the function of nutrition. The destination attributed to the nitrogenous and non-nitrogenous elements of food, is that first brought prominently forward by Liebig, and afterwards employed to distinguish them as the *plastic*, or nutritive, and the *heat-producing* alimentary substances. The ideas of Liebig in regard to this subject are, in fact, freely adopted, and his phraseology employed to a great extent in this portion of the work; the living body being regarded as an apparatus of combustion, and many, if not all, of its exhalations and excretions as the results of this process.

There is some advantage in adopting this mode of describing the nutritive changes, when so much is to be told in so small a space as Dr. Bennett's book allows. It brings prominently forward before the mind of the reader that great fact of the incessant and indispensable absorption of oxygen by the living body, which is at the same time one of the most striking and most universal of the physiological phenomena. It fixes it upon the recollection of the student, that, as a fire cannot burn without air, so an animal cannot live without breathing; and respiration and combustion, associated with each other by the identity of their conditions, fix these conditions in the memory of the student, and facilitate their description.

But the theory and its expression have disadvantages also, which more than counterbalance any benefit to be derived from them, unless for a very popular or a very superficial treatise. The more condensed the author's style, the more precise and unvarying must be the terms in which he describes this oxidizing or "combustive" process, to which the living body is subjected; and the more certainly will the reader imbibe the erroneous idea, that the relation between respiration and combustion is not simply a

resemblance in their principal *conditions*, but a resemblance, or identity, of the *processes themselves*. It is even sometimes difficult to be sure, when a writer employs this phraseology, whether he intends it to be understood in the former sense or in the latter; and in other instances it is certain that the theory is adopted as a complete explanation of the nature of the entire respiratory process. It is curious to observe how, after its adoption, all the phenomena of nutrition are ingeniously fitted into its edges—those which will not adapt themselves to it on any terms being quietly left out of the question, as of no interest whatever. The production of urea, for example, is regarded as the most complete state of oxidation, or combustion, for those principles of the body which are not convertible into carbonic acid; and uric acid as the stage of oxidation next below. The presence of uric acid in the excretions is accordingly owing to the imperfection of the combustive process, and a more active respiration would convert it into urea.

"In this manner is explained how the urine of the boa constrictor is semi-solid, consisting almost entirely of bi-urate of ammonia, as the animal eats an enormous meal of nitrogenous food, but being a cold-blooded, slowly respiring animal, it takes in too little oxygen to convert the uric acid into urea. On the other hand, the lion and the tiger, equally carnivorous with the serpent, are rapidly-respiring, warm-blooded animals, and although, from their violent muscular exertions, rapid and great destruction must occur, scarcely a trace of uric acid is found in their urine, as it is all converted into urea at the moment of its formation, in consequence of the abundant supply of oxygen."

The presence of uric acid in the urine of the cold-blooded reptiles is thus attributed to their deficient respiration, and regarded as a corroboration of the above theory; while no weight is given to the equally important fact that uric acid is also a characteristic product of the warm-blooded and rapidly moving birds, in whom respiration is even more active than in mammalia. The greatest disadvantage, therefore, of theories like the above, is that they may lead us to place a false interpretation on the facts which we unconsciously endeavour to bring into harmony with them.

In the division on the nervous system, the general properties of the nervous tissues are given, as well as the particular functions of the various ganglia and nerves—all being treated with the same condensed and well-managed brevity which characterizes the other portions of the book. The phenomena of sleep, dreams, somnambulism, and what the author calls, *mono-ideism*, or the condition of those who are under the influence of mesmerism, religious ecstasies, &c., are described in such a manner as to be both interesting and useful to the practical physician. In the division on reproduction, a very capital series of twenty-eight cuts is introduced, valuable as showing the successive stages of development in the ovum of the same species of animal (dog). Part Third is occupied with the description of the phenomena of congestion, inflammation, exudation, fever, ulceration, morbid growths and degenerations, derangements of the nervous system, and a short chapter on the various modes of death.

In a book which goes over so much ground in so small a space, the reader cannot, of course, expect any part of the subject to be treated in an exhaustive manner, but Dr. Bennett's work certainly fulfils its own object in a remarkably successful degree. We notice, however, several inaccuracies, both of statement and expression, not necessarily connected with the style or arrangement of the book, some of which at least are undoubtedly the result of oversight.

The diameter of the molecular fibres of coagulated fibrin, for example, is given (p. 27) as $\frac{1}{1200}$ to $\frac{1}{1600}$ of an inch. This measurement is at least ten times too large. A similar error exists, on page 28, as to the size of the white fibres of areolar tissue, which are said to vary in thickness from the $\frac{1}{1200}$ to $\frac{1}{8000}$ of an inch. They are seldom, if ever, larger than $\frac{1}{20000}$. This inaccuracy is the more striking, as the size of the yellow elastic fibres is correctly given a short distance below on the same page, viz., $\frac{1}{4000}$ to $\frac{1}{12000}$ of an inch.

The daily quantity of urea excreted by man is estimated (p. 93) as only 270 grains. The actual observations made by medical men, of various stature, on their own persons, give the quantity of urea in twenty-four hours as 487, 670 and 408 grains (Lehmann, Hammond, John C. Draper).

The animal organism is said (p. 36) to return to the atmosphere—"carbonaceous matters in the shape of carbonic acid, hydrogen as a constituent of water, and *free* azote in the form of *oxide of ammonium*."

On page 39, in the enumeration of the proximate principles, we are told that "*fibrin* forms nearly the whole substance of the muscles."

The pigmentary principles are said (p. 40) to be "evidently allied to the oily constituents in living beings;" and again (p. 51), the pigmentary substances may be "regarded as a modification of the fatty." We do not know upon what grounds such a comparison can be based. The pigmentary principles all contain nitrogen as an ultimate element, and are, therefore, totally distinct, in chemical constitution, from the fats. They are accordingly usually associated, by writers on this subject, with the albuminoid principles.

"The temperature of arterial blood (p. 76) is one or two degrees higher than venous blood." The blood in the veins of the surface, or that coming from the extremities or thin membranous parts, as the ears of rabbits, horses, &c., is found to be a little cooler than arterial blood, owing to its exposure to the external temperature, while passing through the capillaries; but venous blood, simply as such, is not of a lower temperature than arterial blood. Indeed, the venous blood coming from the internal organs, which has not been subjected to cooling by external exposure, is almost invariably found to be warmer than arterial; and the arterial blood of the left cavities of the heart is constantly of a sensibly lower temperature than the venous blood of the right cavities. These points have all been elucidated by the careful experiments of Bernard.

In speaking of the formation of the corpus luteum, after the occurrence of hemorrhage into the ruptured Graafian vesicle, and coagulation of the effused blood, the author says (p. 159): "This coagulum of blood becomes gradually absorbed, in the course of which it changes its colour, and assumes a yellow and puckered appearance. In this state it has been called *corpus luteum*," &c. It is not the coagulum of blood in the ruptured Graafian vesicle that assumes the yellow hue characteristic of the corpus luteum, but the thickened and hypertrophied wall of the vesicle itself, in which the coagulum is enveloped.

The author sometimes employs expressions, while speaking of the urine and its ingredients, which might seem to imply that they constitute a true secretion, formed by glandular cells, in the same manner with other secretions. Thus he says (p. 21): "Why some of these (glandular) cells should secrete bile, *others urea*, a third class saliva, a fourth milk, and so on, is only explicable by attributing to these minute corpuscles the possession of vital properties, whereby one attracts and selects from the neighbouring

bloodvessels the materials which it forms into bile, *a second such as it fashions into urea*, and so on." And again (p. 91), the arrangement of the Malpighian tufts and bloodvessels in the kidney "permits the ready passage of a large amount of water from the blood, which, as it flows out through the ducts, receives the secretion *formed by the cells which line them.*"

It would be better, in a book devoted to physiology, always to give a distinct and unmistakable expression to the fact, universally acknowledged, that the urea and other characteristic ingredients of the urine are not formed in the kidney, either by cells or any other elements of its structure, but are drained away, ready formed, from the blood which passes through the capillaries of the organ. This fact is so essential, and separates the function of the kidneys so completely from secretion proper, that it is worth keeping in the foreground whenever these organs, or their function, are the subjects of discussion.

Perhaps the most satisfactory chapter in Dr. Bennett's book is that on the "General Pathology of the Nervous System," in which the most important characteristics of this department of pathology are laid down in the form of certain "pathological laws," as, for example,

"*All the functions of the nervous system may be increased, perverted, or destroyed, according to the degree of stimulus, or disease, operating on its various parts.*

"*The seat of the disease in the nervous system influences the nature of the phenomena or symptoms produced.*

"*The rapidity or slowness with which the lesion occurs, influences the phenomena or symptoms produced.*

"*The various lesions and injuries of the nervous system produce phenomena similar in kind.*"

The application of each of these laws is elucidated, and its operation exemplified, in a rapid but exceedingly judicious and profitable manner. The whole division on pathology is also well arranged, and is at least an equally important element, in the plan of the book, with the physiological part. The mechanical execution of the whole is admirable, and leaves nothing to be desired in clearness, elegance, or convenience of arrangement.

J. C. D.

ART. XIV.—*Third Report of the Clinical Hospital, Manchester, containing Results in Physical Development, Hooping-Cough, and Transmitted Diseases.* By JAMES WHITEHEAD, M. D. London, 1859.

UNDER this unpretending and rather indefinite title, Dr. Whitehead has presented us with a series of statistics in reference to the physical development of children, and to certain questions connected with the etiology, history, and therapeutics of some of their more prominent diseases, which, as far as they go, are of deep interest to every practitioner in his study of the hygiene of the first stages of existence, and of the diseases which are then most liable to occur, with their proper management. These statistics are based upon facts derived from the observation of 2,584 patients, comprising those of all ages, from earliest infancy to the termination of the period of childhood, treated at the Clinical Hospital of Manchester, from January,

1856, to the end of October, 1858. They are presented with a degree of candour, and an absence of all appearance of an intention to sustain by them any foregone conclusion of the author, which gives to them a character of perfect truthfulness.

The 2,584 patients above referred to include 288 readmissions, children who had been previously under treatment, and cured or relieved, but brought again under notice, after longer or shorter intervals, either in consequence of relapse, or for some other form of disease, and claiming special attention in consequence of their recorded physiological history.

Of the whole number, 301 were under six months of age, 341 were between six and twelve months, making a total of 642 under one year; 593 were between one and two years old, making a total of 1,235 under two years of age; 373 were between two and three years of age, making a total of 1,608 under three years; 571 were between three and six years of age, and 405 between six and fourteen years.

The majority of the patients were males, these bearing a proportion to the females of 8 to 7. About one-fifth were children of Irish parents, and a few (25 in all) of foreign parents. 13 were premature births—20 twin births—and 32 were illegitimate.

About ten per cent. of the entire number were destitute and forsaken children—namely, 9 orphans, 20 deprived by death, and 2 by desertion, of their mothers, and 88 by death, and 35 by absence, of their fathers. 87 were in a state of extreme uncleanliness and neglect; of the neglected, 12 were illegitimate, and 9 orphans or whose fathers were absent.

Nearly two-thirds of the patients had been placed from their birth under the most unfavourable hygienic circumstances—such as residence in unhealthy localities; in closely built streets and alleys; in overcrowded dwellings or underground apartments, with deficient ventilation; neglect of domestic and personal cleanliness, and unnutritive and badly cooked food.

"Superstitions and prejudices, prevalent among some of the lowest orders, operate," we are told, "in a remarkable manner to the detriment of infant life and health. When a child is seized with fever or other malady of severe character, it is generally deemed by the parents to have received its death stroke, and its extinction is waited for with easy resignation, without a thought of seeking remedial aid beyond their own resources."

"From the moment the idea seizes one of these mothers that her child's malady is to be fatal, all attention to cleanliness, and the comforts derivable therefrom, is discontinued, under the belief, as alleged, that exposure of the skin would be the means of hastening the fatal issue."

Dr. Whitehead describes a maculated condition of the skin as being frequently met with in the children of this class of people, consisting "of small circular spots the size of face freckles." They occupy chiefly the trunk of the body, or those parts covered by the clothing. They have a purple colour, like the maculæ of typhus, and are unassociated with any distinct form of disease, but would seem, nevertheless, to indicate a depraved habit of body. "The skin has a sickly, opaque pallor, the flesh is flabby, the temper fretful, and the energy subdued." These maculatæ would seem to be caused by sloth and personal neglect; they are, we are assured, never met with in the offspring of the cleanly and thrifty.

Dr. Whitehead thinks that this *macula cachectica* is in reality a disease of the skin, due proximately to interrupted cutaneous transpiration caused by the extreme personal uncleanliness which prevails among the children of "the lowest classes."

In order to ascertain whether a certain proportion of the diseases of infant life do not arise from a faulty condition of the development process, the result of causes that may be removed, and consequently to show, if this be the case, that such diseases are susceptible of prevention, inasmuch as the faulty condition which causes them may be more readily and naturally rectified by hygienic than by medicinal means, the patients treated at the Hospital were subjected to a careful series of observation to determine, as far as possible, the condition of their physical development.

"The objects aimed at in this particular branch of inquiry are: 1st. The laws of physical development in infancy, as indicated by the age at which the teething process commences, and that at which it is finally accomplished—the growth of the bony structures, as shown by the age at which that of the skull is completed; the age at which the faculty of walking is attained; all in a state of health. 2d. The manner in which one or more of these processes may be delayed by morbid agencies, and which of such agencies is the most commonly operative in its interference with the natural efforts."

The actual states of development are divided into the *good*, the *medium*, and the *bad*.

"The children marked as being of *good* development are those brought under observation for disorders of local or of acute character, of climatic, zymotic, or adventitious origin, not of inherited or constitutional tendencies to disease, in whom the process of development has not previously been interfered with, whose bodily health is, as a general rule, faultless, and whose parents are healthy. Those of *bad* development are they whose health has been deranged by inherited weakness or tendency to disease, by want of a due supply of breast milk, by faulty diet, poverty, unhealthy locality, or neglect. Those of *medium* development are such who, in any of these respects, cannot be classed with either of the preceding.

"Of 2,584 patients the development was—

Good in	1,030
Bad in	615
Medium in	541
Unknown, or the accounts not reliable, in .	398

"The last two items, amounting to 939 individuals, are consequently rejected. The first two, representing the two extremes, being alone serviceable in drawing conclusions."

The results in relation to the process of teething are based upon observations made in 763 children of good, and in 485 of bad physical development, for the *first pair* of teeth; and for the other teeth, in 83 children of good and 72 of bad development, between twelve and thirteen months old; in 316 of good and 137 of bad development, of two years of age.

From five tables given in the report, it appears that, in the great majority of children of *good development*, namely, in 600 out of 763 (79 per cent.), teething had fairly commenced previously to the end of the eighth month, and in only 21 per cent. was it delayed beyond the eighth month, namely, in 81 of whom it occurred between the eighth and ninth months, and in 64 between the ninth and twelfth months. In none was it delayed beyond the fourteenth month.

In children of *bad development*, only 161 out of 435 (37 per cent.) cut their first teeth before the end of the eighth month; and in 63 per cent. teething commenced after the eighth month, namely, in 63 at nine months, in 107 between ten and twelve months, and in 104 after the twelfth month.

Of 83 patients of *good* and 72 of *bad* development, between twelve and thirteen months of age, of the *first* only one had no teeth, but of the

second 24. At the age of two years, of the children of *good development* 88.6 per cent. had all their teeth, while in those of *bad development* in only 21.8 per cent. was teething completed. Of the *former* only one had so few as twelve teeth at two years of age, but of the *latter* there were 25 whose teeth at that age did not exceed twelve.

In 62 children of *good* development, teething was completed previously to the second year, namely, in one at twelve months, in two at fourteen months, and in 47 before the end of the twentieth month. In 14 teething was not accomplished until after the age of two years.

In 53 children of *bad* development, two only completed their teething before two years of age—one at twenty and one at twenty-one months. In 51 teething was not completed until subsequent to the second year.

"From the above statement," observes Dr. Whitehead, "it will appear that in children possessing the advantages of mature intra-uterine growth, untainted parentage, proper nourishment, and healthy locality, the teething process ought to commence at from five to eight months, and that the accomplishment of its different stages at the periods mentioned gives fair promise for the due attainment of the other processes presently to be mentioned.

"From these data it may be inferred that at the age of fourteen months a child should have ten teeth or more, and that six teeth are the minimum number compatible with good development and favourable prospects at that age.

"The complete irruption of the whole twenty teeth was accomplished in children having a favourable state of the development processes, in nearly 90 per cent., at the age of two years; and as in a considerable number of them this process was completed much earlier, statistics will warrant the conclusion that the teething process should, as a rule, be completed in healthy children at the age of two years.

"It seems worthy of notice that *precocious dentition*, that is, the irruption of the first teeth before the fifth month, had not in every case a favourable significance. Among the patients comprised in the above records, 180 were of this category, having commenced teething at two, three and four months. Of these, 38 were of bad development, in many of whom the process was subsequently interrupted—the next teeth after the first two not appearing until many months afterwards, sometimes not until very late. In several instances in which the first two teeth were cut at two months, the next did not appear until after the age of two years. This precocious dentition would appear, therefore, according to the above data, to give little promise for the favourable progress of after development, inasmuch as among the number recorded of this class, a considerable proportion were afterwards altogether badly developed. On the contrary, the precocious irruption of *all* the twenty teeth is the constant attribute of an excellent state of development. Not a few of the children who accomplished the teething process at sixteen or eighteen months or earlier, were able to walk freely at nine months, and were exceedingly strong in all their physical faculties.

"As regards the disorders of teething—the alleged disturbances, namely, which are said to be caused by difficulties of protrusion and over-tension of the enveloping gum, it appeared evident, in many cases, that both the concomitant ailments and the retardation of teething depended more upon the faulty state of the developmental processes generally than upon local irritation, as it was in but few instances, and these only in infants of highly excitable and nervous temperaments, that scarification was followed by relief. These disorders are doubtless due to constitutional rather than to local causes.

"Three children had each two teeth in the lower jaw at birth. In two of these it was found necessary to remove them because of the injury they inflicted on the under surface of the tongue, while sucking; in the third, now two years old, the congenital teeth remain—the whole teething process being completed, and the child well grown and healthy."

The observations made at the Clinical Hospital of Manchester, in re-

spect to the condition and progress of ossification, commencing with that of the skull, show that in 100 mature infants examined twenty-four hours after birth, the sagittal suture was open or membranous from the posterior fontanelle to the lower part of the frontal bone, with an average length of 5.6 inches—varying but very little in different individuals, or in the two sexes. Its shortest measurement was 4.5 inches, but only in one child every way very small, with a head below the average size, measuring only twelve inches in circumference. The coronal suture was 3.08 inches in extent, and nearly the same dimensions in every child. The great central space, diagonally, measured from 1.5 to 2.5 inches.

The process of ossification progresses at the outer extremities of the sutures with great rapidity during the early months of life. At the age of one month, the sagittal was found in children of good development to have become shortened from 5.5 to 4.5 or even 3.5. At the age of two months the sagittal suture was from 3 to 4, the coronal from 2.25 to 2.50. At about from three to six months, the central space was reduced to a diamond shape, measuring between the points 3 by 2, and between the sides from 1 to 1.5 inches.

In 191 children of *good* development, the fontanelle was entirely obliterated at sixteen months in 101, and in 72 of these at periods varying from one to nine months earlier. In the remaining 90, it was not closed at sixteen months, nor for an average period of four months later—giving fourteen and a half months as the average age for the complete closure of the fontanelle in well developed children.

Of 317 children of *bad* development, in only 15 was the fontanelle closed at the end of the sixteenth month—in more than 220 it was found open after the twentieth month, and in some as late as from three to four and a half years.

According to Dr. Whitehead, a child of good development, with closure of the fontanelle at fourteen and a half months, has usually about fourteen teeth, and has been able to walk firmly several weeks or months; while, in one having at this age the fontanelle largely opened, it frequently happens that not more than from two to six teeth have appeared, and the child is unable to walk. Even at the age of two years, when the teething process should be completed, the fontanelle being still open, there are generally not more than eight to twelve teeth.

"The closure of the fontanelle, therefore, gives a fair indication of the state of the developmental processes, being accompanied generally, with the exception of a few cases of irregularity, by a corresponding condition of dentition, of the faculty of walking, and of the whole physical frame."

Dr. Whitehead remarks that there is occasionally met with an abnormal development of the osseous system from "over-intense ossification"—a state of things which he is led, from actual experience, to consider as comparatively more disastrous in its consequences than the opposite condition of retarded growth. While this excess of ossification is in no way detrimental in its effects upon the bones of the trunk and extremities, it is peculiarly injurious by causing a too early closure and consolidation of the sutures and fontanelles of the cranium, and thus interfering with the due development of the brain in its rapid growth throughout infancy and the early period of childhood.

"It was stated," he says, "in the first report that one such case had then occurred; this being the only instance of the kind which either my late colleague

or myself have ever witnessed. Since that statement was made three other cases have been brought under observation, and a fourth with fatal issue, belonging to one of the families concerned, was noted, making in all five cases of *over-intense ossification*. The case already recorded was in a child three and a quarter years old. When brought to the institution he presented unequivocal signs of compression of the brain. 'He looked dull, the head hanging constantly forward on the chest, mouth open with constant salivation. The circumference of the skull was 17 inches, that of the chest 19 inches; a great predominance of the chest for the age; skull, relative to the size of the body, of small dimensions, but very convex. On the top of the skull, in the place of the fontanelle and part of the sagittal suture, the bone was completely solid, and elevated so as to form a rounded ridge to the height of half an inch. The mother stated that he was a strong healthy child to the age of eight months, after which the present disorder developed itself. The child cut his first teeth at six months, and had all the twenty at from fourteen to eighteen months. He walked firmly at nine months. She was a strong woman; said she had always had as much milk as would have sufficed to sustain two children at the same time. She had given the breast alone to each of her children to the fifteenth or eighteenth month. This child died of convulsions. The explanation we give of this condition is, that by a precocious solidification of the skull, the growing brain became compressed, but while the sutures and fontanelle were still in a yielding condition, the lateral bones being firm, the ridges were formed by the growing brain, compressed in every other direction, and finding less resistance in the situation of the sutures, protruded itself in these parts, which became rapidly ossified also, thus preventing further expansion for the accommodation of its subsequent increase.'

"Of the three similar cases which have since occurred, one, with fontanelle closed at seven months, died of convulsions; another, fontanelle closed at nine months, survives, but suffering from intense diarrhœa; and a third, now four months old, with fontanelle quite closed, suffers from fits of screaming, ending in convulsions. The mother of this child states that her previous infant had a similar condition of skull at four or five months, and died of convulsions."

The next series of obstructions have reference to the actual and relative development of the head and chest. The dimension of these parts respectively, and the proportion the size of the one bears to that of the other furnish, to use the language of Dr. W., in the report before us, most important indices of the power of the system in early life, and of its prospects for the future. Teething, he remarks, may be late, the faculty of walking retarded, or the ossification of the skull delayed to a certain extent; but if the brain and lungs, whether large or small, be proportionately developed, the prospects for the future may still be good.

"The cerebro-spinal system is a great consuming organ, appropriating in early life an immense amount of material, which is furnished by the digestive organs and lungs. If the supply be equal to the demand, the progress of growth of the one keeps pace with that of the other, the general health is good, and the promise for the future favourable. When, from any cause, loss of balance takes place, the detriment inflicts itself chiefly upon the muscular and secretory systems, for the brain continues to appropriate and grow with undiminished vigor, while the locomotor powers fail from impoverishment. The first of these conditions is commonly associated with all the attributes of good, the latter with those of bad development."

In the examinations of the head and chest recorded by Dr. W., the measurements of the first were made horizontally around the most prominent portions of the parietal eminences, and a little above the eyebrows; of the second, also horizontally, about three-fourths of an inch below the nipple, escaping thus the lower angles of the scapulæ.

In children of good development, Dr. W. describes the skull as of an oval shape, with gently curved outlines; the convexity across the summit being regular, without any unusual salient frontal or lateral eminences. In the majority of the badly developed it presents no striking anomaly, and is often well shaped. In less favourable cases it is flattened at the summit, with projecting parietal and frontal eminences, giving to it a flat, angular appearance. This is seldom, if ever, noticed before the age of seven months, commonly between the first and second years. It is almost always the indication of checked development, great weakness, and frequently of the existence of rickets.

In well developed children the chest is generally full and equably rounded from the angles of the ribs behind, to the cartilages in front; the sternum being flattened or slightly depressed—the abdomen not projecting beyond the level of the lower ribs. In well-grown and healthy children, at the age of six or nine months, or earlier, there is occasionally seen a slight semicircular depression at the lower part of the chest laterally in front, below the mammary glands. This is often owing to tumidity of the abdomen. In badly developed children, the chest is often compressed laterally, the ribs, from the sixth to the tenth, below the mammary glands, being pressed inwardly, forming a shallow cavity. In some cases this depression seems to be caused by tumidity of the abdomen, drawing the lower margin of the chest forward and outward, but more commonly it is, doubtless, due "to actual impairment of the development tone, and insufficient supply of material for the growth of the solid structures." The yielding and consequent flattening sometimes extends over the entire antero-lateral portion of the chest, with a simultaneous projection of the sternum and costal cartilages, constituting "the pigeon-breast" deformity. It is frequently associated with other unequivocal signs of rickets.

Tables are given of the absolute and relative measurements of the skull and chest, at progressive ages, from birth to the twelfth year, in children of good development—*the type of health*, and in those of bad development—*the type of the scrofulous cachexy, tuberculosis, and atrophy*, from defective nutrition and other causes.

These tables show that the dimensions of the head do not differ materially in the healthy and unhealthy. "The disparity is principally noticeable in the size of the chest, the lungs being the organs which suffer the earliest and most commonly under a state of impaired nutrition." At birth, the measurements are the same for both groups, the health and development being, as a general rule, perfect in the full-grown fœtus. This, then, is the starting point, whence it is interesting to notice the relative growth of the two cavities respectively—especially the chest—under the influence of favourable and unfavourable agencies.

"The most rapid growth of the brain takes place during the last four months of intra-uterine life; the fœtal head, at 4½ to 5 months, measuring about 6 inches, and the weight of the brain being about 6 or 8 ounces; while that of the full-grown fœtus measures fourteen inches, the weight of the brain being about 25 ounces.

"The most rapid growth after birth takes place during the first two months; the next during the third two months, and so on to the end of the first year, after which it gradually decreases in rapidity of growth.

"It has been shown, that at birth the average girth of the head exceeds that of the chest by eight-tenths of an inch. From this time the march of growth is nearly in parallel order—the chest augmenting a little more rapidly than the

head, except in earliest infancy—to about the age of 3½ years, at which period, in those of good development, the measurements are equal."

"In the badly developed, the equality of dimensions of skull and chest which, as above represented, takes place in the healthy at about 3½ years, it is not attained, as is proved by statistical evidence of a similar kind, until two years later—namely, at the age of about 5½ years.

"As a rule, the developmental processes progress much more regularly and evenly during the first two or three months than they do afterwards; the child, at a later period, being exposed to the damaging influences of improper diet, atmospheric impurities, neglect, uncleanliness, infectious diseases, and a multitude of injurious agencies. In one child the measurement of the head at birth was 15.25; increase in the first month one inch and an eighth. At the age of two months the circumference of the head was 16 inches. In another, at birth, the circumference of the skull was 14.25; at the age of thirty days it was 15.15. In one measuring 13.5 at birth, the chest also 13.5, the measurements at the age of thirty days were 14.5 and 14.35 respectively. And so it was in every case examined, amounting to about thirty, the increase during the first month, the children being healthy, and having a suitable supply of breast-milk, being seldom less than one inch.

"The expansion of the chest during the same period was somewhat less rapid, as in the first named of these cases, the trunk, which measured at birth 12.5 inches, at the age of thirty days measured only 13.25; thus, while the brain had increased more than one inch, the chest had grown only three-quarters of an inch; the child being quite healthy, and having a sufficient supply of breast-milk. In one case in which the brain and chest had each a girth of 13 inches at birth, at the age of thirty days the skull measured 14, and the chest 13½ inches. The growth of the chest advances more rapidly after the sixth month, and in the well developed nearly at a parallel rate with that of the brain, until towards the end of the teething period, but not equalling that of the skull until the fourth year. After the fifth year the chest begins to exceed in its dimensions those of the head, and this predominance goes on rapidly increasing up to the twelfth year, at which period its measurements exceed by more than three inches those of the head, and so it continues in advance, in healthy individuals, to adult life. In one remarkable instance, a female, 12½ years old, well developed, the girth of the chest was six inches more than that of the head. But taking children of all castes and conditions, including irregularities, it was only after the seventh year that the predominance of the chest over the head was constant, and from this age it yearly increased, not excepting badly developed individuals."

In comparing the differential measurements of the skull and chest at progressive ages in the male and female respectively, including all conditions of development, it was found that, as a rule, the female chest exceeds, at birth, in circumference that of the male; but without any greater capacity of lungs. The increased circumference being due to the bulk of the mammary glands, which are comparatively larger at birth than for some years afterwards.

The inquiries into the period at which the power of walking becomes established, shows a remarkable difference in this respect between the well and badly developed. Thus of 710 children of good development, 672, or 94.5 per cent., were able to walk freely before the end of the fifteenth month, and only 5.5 per cent. were unable to walk at that age; while of 464 children of bad development, only 70, or 15 per cent., could walk at the age of fifteen months, and 85 per cent. not until after fifteen months. Of the 710 children of good development, only 12, less than 2 per cent., commenced to walk at eighteen months or later; while of 464 badly developed, 216, or 46 per cent., only began to walk at eighteen months or subsequently.

Of the 710 of good development, 52 walked before the end of the ninth month; 77 at ten months; 133 at eleven months, and 188 at twelve months, making altogether 450 (63 per cent.) who walked at or before the end of one year; while of the badly developed, none walked at nine months, 2 at ten, 4 at eleven, and 18 at twelve months, making only 24 (5 per cent.) who walked by the end of twelve months.

"The ability to walk at the age of twelve or thirteen months is, therefore, a certain indication of good development, and favourable prospects for the future."

Dr. Whitehead gives the following as the signs of good development:—

"At the age of *one month*, in children favourably developed, the margins of the sagittal suture at each extremity are already in apposition, and its length shortened one inch or more; the abdomen, although exceeding the chest in girth, should not be tumid; the child should be fully satisfied with a breast meal every 2 or 2½ hours; the food should not be returned in any quantity, and the aggregate hours of sleep should be at least twenty out of the twenty-four.

"At *two months*, the sagittal suture should be reduced from 5½ to 3½ or 3 inches; the girth of the head should be 2, and that of the chest 1¾ inches more than they were at birth; the breast-milk alone should entirely satisfy the appetence; the body and limbs should be plump and rounded, and the sleeping hours eighteen to twenty out of the twenty-four.

"At from *five to six months*, the sagittal suture should be reduced to 2 or 2½ inches, and the coronal to 1½ or 2 inches, so that the fontanelle at this period has a diamond shape, with its sides encroaching upon the space, with slightly curved outlines; the abdomen should be less prominent, the girth of the head and chest each 2½ to 3 inches more than at birth; the breast-food should fully satisfy his wants, at intervals of 2½ to 3 hours, and he ought to sleep seventeen to nineteen hours.

"At *eight months* there should be two teeth; the fontanelle should not exceed 1 to 1½ inch in each direction; the flesh should be firm, the movements of the limbs vigorous, with an inclination to feel the ground with the feet; the sleep should be about sixteen hours, and the circumference of the skull should not exceed that of the chest by more than 1½ inch.

"At *fourteen months* there should be eight or more teeth; the fontanelle closed with bone; the skull not exceeding the chest in its girth more than one inch; the prominence of the abdomen perceptibly reduced; the child should be able to walk, and should sleep placidly fifteen or sixteen hours in the aggregate.

"At *two years* of age all the twenty teeth should have protruded; the skull not exceeding the chest more than ¾ inch; the abdomen not protruding beyond the level of the chest; and the abdominal functions regular, not requiring the use of medicine.

"At *three years* the chest in girth should nearly equal that of the skull; the teeth should be sound, the breath sweet, the limbs straight, the wrists and ankles not bulky, the appetite not voracious, without craving for food or drinks in the intervals.

"At *four years* the circumference of the chest should exceed that of the head by half an inch; the stature should become more rapidly increased; the limbs, although apparently thinner, should have the muscles firm, and the extremities of the long bones not notably bulky. The abdomen should not be tumid, as is frequently the case at this and earlier ages, from disordered functions and the presence of worms.

"At *eight years* the girth of the chest should exceed that of the skull by 2 to 3, and at *twelve years* by 3 to 5 inches.

"The face should be larger, in appearance at least, than the forehead, especially during the first three years; the shape of the skull not angular or flat, but rounded at the sides, with a proportionably elevated summit, and the chest regularly rounded, without lateral compression.

"Deviations from this general rule not unfrequently occur in children of otherwise good development, but without a bad significance. The most frequent of these irregularities is retardation of the teething process, sometimes to a considerable extent, but in such cases, if the fontanelle be early closed, and the faculty of walking duly advanced, there is no need to fear about the after progress."

An interesting section follows comprising the observations made at the hospital in reference to vaccination. We can afford room only for a notice of the conclusions arrived at from these observations in respect to a common accusation brought against the operation of vaccination by parents; that, namely, it is liable to entail upon children a variety of cutaneous and other diseases. While no satisfactory ground could be ascertained, after patient investigation, in substantiation of this accusation in the majority of cases, Dr. Whitehead considers, nevertheless, that in 34 instances, there was presented sufficient evidence to warrant the belief that a taint had been communicated by the vaccine infection; and in 14 of these the disease implanted was of a genuine syphilitic character. He very properly remarks that this communication of disease is by no means a necessary result of vaccination; it can never occur when care is taken to employ only pure matter in the propagation of the vaccine infection. Physicians cannot, therefore, be too particular in the selection of the virus employed by them in vaccination.

"A child," says Dr. W., "of naturally vigorous constitution, whose blood is tainted with the poison of syphilis, may retain the outward appearance of health up to three, six, or twelve months, or even two or three years, or longer, before a characteristic outbreak shows itself. The parents of such a child may also have the semblance, to superficial observation, of faultless health, although still possessing the seeds of this malady in a degree sufficient for its transmission to their offspring. It is from such sources that mischief is often derived and disseminated by vaccination and other modes of implantation, and it is thus that the efficacy of this great sanitary measure has been in many instances rendered questionable."

Of the 2,584 patients, the history of whose condition and diseases is comprised in the present report, 211, a little more that 8 per cent., had hooping-cough. It is stated that it occurs throughout the year, with greater or less frequency, and in varying intensity, being influenced by the character of the season, and the nature of prevailing epidemics.

Of the 211 cases of hooping-cough above referred to, 59 occurred in the spring quarter; 59 in the summer quarter; 47 in the autumnal quarter; and 46 in the winter quarter.

The severity of the proper symptoms of the disease varied but little throughout the disease; the violence and danger of particular cases depending mainly upon the nature and violence of the superadded affections, and the previous condition of the patients.

In inquiring into the average duration of hooping-cough 35 cases were omitted; the disease in these having existed on admission over two months, the prolongation being evidently dependent on either neglect, severe complication, or some other extraneous circumstance. Of the remaining cases, some of which also fell under the same imputation, having already existed 40 or 50 days, and upwards, the average duration of the disease on admission was 16 days. Thirty of the patients ceased to attend before the cure was complete, and 32 died. The remaining 149 cases were dismissed cured, after an average treatment of 26 days—giving as the duration of hooping-

cough, aided by treatment during the latter two-thirds of its course, a period of 42 days.

Of the 35 irregular cases, 18 had existed more than two months; 7 three months; 6 four months; 1 five months; 2 six months; and 1 three years. The last case may be left out as a singular exception. The average duration, therefore, of the thirty-four cases on admission was 86 days; that occupied in their treatment was 25 days, giving as the average duration of these neglected cases, a period of 111 days.

"The case of three years' standing was in a girl 4½ years old, who had scarcely been a day without two or more paroxysms of severe hooping, since the invasion of the disease at the age of 18 months. On admission, she was labouring under chronic bronchitis, having loud moist rhonchi, and varying regional dulness, with severe cough and dyspnœa. She had frequent fits of coughing and hooping, which ceased only with vomiting of phlegm, often mixed with blood. She was treated with oxy-sulphuret of antimony and opium, and camphor inhalations, and was discharged cured in 26 days."

The usual complications of hooping-cough were, in the winter months, capillary bronchitis, broncho-pneumonia, pleuro-pneumonia; and in the summer months, diarrhœa, dysentery, biliary derangement, and mucous disorders generally. It was also frequently associated, at all seasons, with gastric derangement, retarded or checked development, rachitis, worms, and, in a great majority of instances, it was aggravated by faulty alimentation, the result of ignorance.

In 46 uncomplicated cases, the duration of the disease in 35—excluding 11 neglected cases—from the onset to the termination, was 40 days.

The number of deaths was 32—15 per cent. Only one death occurred among the uncomplicated cases.

"The other thirty-one deaths occurred from pulmonary, gastro-intestinal, inherited, and various forms of disease, most of them previously existing, and several of which would have proved fatal at no distant period. *Seven* of them sunk under broncho-pneumonia, preceded in several by chronic bronchitis; but aggravated into the severer form of pulmonary disease by the spasmodic cough; most of them were associated also with gastric derangement, worms, or atrophy. *Two* died of tuberculosis, both of them the offspring of consumptive mothers, and in two others, not ranged under this head, the existence of tubercles in the lungs was suspected, and almost certain. *Eight* died of convulsions with rachitic, atrophy, bronchitic, or gastric complication; *two* were cases of syphilitic wasting, which would probably have been fatal at a not much later date, had the end not been hastened by hooping-cough; *two* sank from diarrhœa; *one* from pleurisy; *one* from scarlatina; and *one* from gastric fever.

"Hooping-cough, although succeeded in a few instances by an improved state of health and constitutional vigour, not unfrequently impairs the general tone, and entails for a time, a high susceptibility to several forms of disease. The most frequent of these are delicacy of the bronchial and portions of the alimentary mucous membrane, and morbid irritability of the respiratory and splanchnic nerves, with consequent disturbance of the functions which these nerves regulate. Bronchitis and other forms of pulmonary disease, in most instances pre-existing, formed a complication in 105 cases, and in not a few continued to exist for variable periods—weeks or months—after the neurotic affection had ceased. In several instances, after the lapse of three, six, or twelve months, during which the child was quite well, a relapse of hooping-cough came on, the paroxysms being equally severe and frequent as in the first attack; and in several others, attacks of spasmodic cough, recurring in paroxysms, but without hooping, came on from time to time during the six or twelve months following the cure of the hooping-cough.

"Diarrhœa and dysentery, in decided and severe forms, were complications in

44, and gastric affections, associated in some with stomatitis, in 17 cases; diarrhœa frequently constitutes, also, both a consecutive and recurrent disease during the first twelve months. Independently of its occurrence in decided form as a troublesome complication, diarrhœa not unfrequently assumed a somewhat different aspect. It sometimes came on, for instance, as though the result of remedies, at a time when these seemed to be acting most beneficially in relieving the cough and spasms, although the remedies used do not possess aperient properties.

"Muscular twitchings of the limbs and features, nervous palpitation, neuralgia, headache, spasmodic asthma, irritable stomach, with intolerance of solid ailment, forming slight degrees of chorea, are instances of nervous irritability following hooping-cough, and continuing more or less for a season."

Of the infectious nature of hooping-cough, Mr. Whitehead believes there can be no doubt.

In respect to treatment, he is convinced that when this is judicious in character, and commenced in the early stage of the attack, it is capable of moderating the predominant symptoms, warding off serious complications, and materially shortening the duration of the disease.

The remedies employed at the Hospital were, in simple cases, or when the complicated cases had been reduced by an appropriate treatment to this condition, Dover's powder alone, or combined with camphor, camphor inhalations, emetics, belladonna, and local irritants. Sometimes the Dover's powder was replaced by tincture of opium, given in camphor or other aromatic water.

"Belladonna," we are informed, "was used in 76 cases. It was given in form of powder of the leaves, never the extract, as this is an uncertain preparation, and sometimes in form of solution of the nitrate of atropia. When in the form of powder, half a grain, mixed with five grains of sugar, was given to a child twelve months old, twice a day—then, after two days, if well tolerated, three times, then four times a day or oftener, and in larger doses; being gradually increased until a specific effect was produced. The solution of nitrate of atropia was prepared so as to contain one ninety-sixth of a grain in a teaspoonful of the liquid—this dose of the salt is equal in its therapeutical effect to about half a grain of the powdered leaf, so that a teaspoonful of it may be given twice or thrice daily to a child twelve months old."

The symptoms indicative of *atropism*, as the specific effect of the belladonna is termed by Dr. W., are—dryness of tongue and fauces, with thirst, slight dyspnœa, redness and sometimes puffiness of the skin of the features, neck, and chest, occasionally, but not always, dilatation of the pupils, and now and then slight giddiness. It is not necessary, we are told, to push the remedy in all cases to this extent. In those who bear it well, and in whom atropism is speedily induced, the disease, even in its severest form, and in the stage of increase, is at once arrested, and, with due precaution, does not relapse. In several instances brought early under treatment, in which atropism was induced after a few days, the duration of the attack was reduced to twelve, sixteen, or twenty days.

"Of the 76 cases treated by belladonna, 9 were very irregular in attendance, the treatment being interrupted for a week or ten days at a time. In the other 67 cases, in some of which the attendance was also irregular, the average duration of the treatment was twenty-two days, giving a decided preference to this remedy. It is highly probable that were the belladonna treatment early adopted in each case, and associated with suitable hygienic regulations, the duration of the disease might be reduced from its average of forty-two days to that of twenty-eight or thirty days, and both its concomitant and consecutive accompaniments be materially lessened.

"The tolerance of belladonna is different in different subjects, and is probably as great in the young child as the adult. While a few half or quarter grain doses will suffice to atropise one, another will bear the article for a length of time in high doses, if augmented gradually. In a child four and a half months old, on the fourteenth day of the attack, a quarter of a grain was followed by alarming atropism. On the next day, the symptoms having subsided and the hooping being relieved, another such dose was given, and followed by symptoms still more violent than the first. Further trials were not made. In contrast with this, to a child two and a half years old the dose was increased from half a grain twice, to six grains five times a day—thirty grains daily—before a crisis was brought about.

"The diet of a patient labouring under hooping-cough should be carefully regulated. An error in this way is quite enough to aggravate or prolong the disease, or to cause a relapse after it has been absent many days. The aliment, whether animal, farinaceous, or vegetable, should be in the liquid or semi-liquid form, and such as is easily assimilated. The alimentary mucous membrane being in a highly irritable condition, the presence of solid food can with difficulty be tolerated, and often occasions great disturbance. A meal of solid food will often aggravate the paroxysms both in severity and frequency, and may induce a relapse after a cessation of several days or weeks. By a similar kind of sympathetic irritability, the presence of worms in the intestines will aggravate the symptoms or prolong the duration of hooping-cough almost indefinitely. In several instances in which the symptoms continued unabated unduly long, and where it was found that worms existed, the expulsion of these parasites was immediately followed by mitigation of the paroxysms, and speedy cure."

The observations presented in the report of Dr. Whitehead on the subject of syphilis in children—its phenomena, duration, and treatment—are replete with interest and instruction; had we not already occupied so large a space with our notice of the previous sections of the report, we should be induced to present a very full analysis of them.

We must pass over, also, the section of the report devoted to the women's department of the Hospital, and diseases treated there during the two years embraced in the report, with a mere notice of a form of uterine hemorrhage frequently met with in the patients of the institution, and the remedy Dr. W. has found most successful in its treatment.

In some cases the hemorrhage was in the form of menorrhagia, the periods being regular, but more or less prolonged, and the intervals attended with an exhausting leucorrhœa. In other cases, the periods of discharge were irregular—always too frequent and protracted—continuing from six to twelve days or longer, with an interval of five or ten days occupied by leucorrhœa. In a few the discharge lasted several weeks at a time, returning after a short interval of rest, and often when not expected—losing entirely its regular periodicity. All the patients were more or less anæmic, with great lassitude, pallor of skin, languid and enfeebled circulation, often jugular bruit and hysterical disturbances in various forms.

"The pathology of these cases," says Dr. W., "consists in vascular or spongoid hypertrophy of the uterus as a principal condition. The uterus, whether nomally placed or otherwise, was always too bulky; its lower section was expanded, its density lessened, its fundus, in some instances, could be readily felt above the pubis without pressure from below, and its depth was generally increased. The veins of the cervix, and no doubt those throughout the entire organ, were congested, one or more varicose knuckles being occasionally visible, constituting what has been called uterine piles. All the pelvic structures were relaxed. The hæmorrhoidal veins were often distended, and occasionally there was rectal flux, with or without rectal hæmorrhoids. Concomitant symptoms of hepatic disturbance were also not uncommonly present."

The remedy Dr. W. found most advantageous in these cases was the yarrow (*Achillea millefolium*). It was given in the form either of tincture or decoction. He states that the grounds upon which it is recommended as an anti-hæmorrhagic are not limited to the experience cited in the report before us. He has used it pretty freely in private practice for about three years, and the results now announced correspond with those derived from its previous trial. D. F. C.

ART. XV.—*Diseases of the Stomach, with an Introduction on its Anatomy and Physiology; being Lectures delivered at St. Thomas's Hospital.* By WILLIAM BRINTON, M. D., Fellow of the Royal College of Physicians; Lecturer on Physiology and on Forensic Medicine in St. Thomas's Hospital; Physician to the Royal Free Hospital. London: John Churchill, New Burlington St., 1859. 12mo. pp. 406.

As preliminary to a short notice of this work, we quote an extract from the author's preface :—

"The following lectures are published, in the hope that they will be found a brief but complete account of what is at present known concerning the diseases of the stomach.

"Fifteen years ago, the death of a near relative painfully impressed me with the obscurity and uncertainty which peculiarly attach to the maladies of the abdominal viscera. From that time I have given to these maladies whatever attention could be justifiably devoted to a special group of diseases by a student and practitioner of physic in general.

"Of the materials I have thus collected, those which form the basis of the following lectures are derived from sources so various, as to render the concord equally important with the number of the facts they represent. To the large opportunities offered me, during twelve years, as a dispensary and hospital physician, I have added whatever could be gleaned from a field of observation, the magnitude of which it is difficult to estimate. The hospitals and museums of various cities; the cases recorded by authors of various epochs and countries; and especially, the stores of information which are gradually accumulating in the journals, reviews, and transactions of the medical profession in the more civilized parts of the world—all have been laid under contribution; and have yielded me facts which (considering the price of human suffering paid for pathological knowledge) deserve a respect and attention I sincerely disclaim for the manner in which I have arranged and used them. To this general acknowledgment I must add my special thanks to numerous professional friends, and to hundreds of observers whose smaller contributions could not be separately quoted in the following lectures."

After the announcement, in such glowing terms, of the immense amount of material collected from so many and wide-spread sources, together with the time and labour bestowed on the subject, the reader must be surprised that the author is able to compress the results of his investigations into a duodecimo of 406 pages. An examination of the work, however, shows that the results are less than the tone of the preface would lead us to expect. The work can hardly be said to contribute much that is practically important, to our knowledge of the diseases of the stomach.

The first 44 pages are devoted to a summary of the anatomy and physiology of the stomach. The remainder of the work consists of six lec-

tures. The subject of the first lecture is the symptomatology of gastric disease. Circumstances connected with the examination of the stomach after death, and gastritis, are the subjects treated of in the second lecture. Lecture third is occupied with ulcer, and lecture fourth with cancer of the stomach. Several topics are considered in lecture fifth, viz: Cirrhotic inflammation or plastic linitis of the stomach; suppurative linitis; tumours; hypertrophy; atrophy, and dilatation, etc. The sixth and concluding lecture is devoted to the consideration of dyspepsia.

The lectures on ulcer and cancer of the stomach form the most valuable portion of the work. The statistics cited in these lectures, may be consulted with advantage. Ulcer of the stomach has been treated of by the author in a separate publication, from which is derived the greater part of the lecture on this subject. The author states that his account of the *symptoms* of gastric ulcer is based on facts obtained from two sources, viz: "The records of about 1200 cases, often affording a mere outline of the chief symptoms, but always verified by careful necropsy; and the personal study of more than 200 cases, affording minute details respecting symptoms, but only verified by necropsy in a small proportion of that number." We think we shall not incur the charge of being unreasonably sceptical, if we express surprise with regard to the occurrence of 200 cases of ulcer of the stomach in the clinical experience of any one practitioner, during the space of fifteen years, especially when it is stated that the diagnosis was verified by necropsy in but a small proportion of this number. The symptomatology based on the clinical study of these cases, we should not regard as entirely reliable. But the author candidly confesses that "the information derived from these two sources has shown none but negative discrepancies; in other words, none but differences chiefly explicable by the unavoidable omissions of such brief records."

The terms 'cirrhosis of the stomach,' or 'plastic linitis,' and 'suppurative linitis,' applied to forms of disease treated of in lecture fifth, are new, and are not likely to suggest to the mind of the reader the morbid conditions which they are intended by the author to designate. We quote the following account of typical specimens of the affection which he calls cirrhosis of the stomach.

"The necropsy of some obscure gastric disease of long standing shows a stomach which, even on our dividing the wall of the belly, strikes us as remarkably altered. Sometimes large, sometimes small, perhaps of average dimensions, it has a peculiar pearly whiteness and opacity; an appearance which is partially due to a dulness of the peritoneal coat, in remarkable contrast with its ordinary mirror-like brilliancy. Removing the organ for further examination, we find this change of colour associated with great increase in its weight and density; so that, for example, it has a hard gristly feel; and not only fails to collapse by its own weight, but resists a considerable pressure; or returns to its original shape on the removal of such pressure, like a large artery or a caoutchouc bottle. An incision through the coats of the organ exhibits a vast increase of its thickness: a change which, as it is diffused equally throughout the stomach, leaves the relative depth of vertical sections of different parts little affected; and is hence summed up by the statement that the thickness is some six or eight times greater than what is normal. But in spite of this thickening (which is often attended by an increased density that makes the pearly white section fairly creak while it is being traversed with the scalpel), the different gastric tissues remain not only discernible, but distinct from each other. Often, indeed, their adjacent boundaries are evidently composed of a looser tissue than that of the mass elsewhere; while even the proportionate thickness of the areolar, muscular, and serous coats sometimes approaches that of the healthy

tissues. The mucous coat, however, appears much less affected; its matrix being either little changed in thickness, or indistinguishably fused into the subjacent 'tunica nervea,' and its secretory structures remaining substantially healthy. Finally, the whole organ is comparatively bloodless: a condition which is not only in marked contrast with its normal state after death, but is, of course, most remarkable in the more vascular of its coats, to wit, the mucous membrane. A closer inspection of such a specimen shows that the abnormal character is not limited to a mere increase in thickness. However distinct the gastric coats, they are far from offering that contrast to each other which is characteristic of their healthy structure. Muscle, areolar tissue, matrix and mucous membrane are all unnaturally alike. All evidently owe their increased thickness to the presence of the same new substance; the uniform and interstitial deposit of which is one of the main characteristics of this gastric lesion."

We do not doubt the occurrence of a condition of the stomach such as the author describes. We have a specimen in which these appearances are strongly marked. In these cases the disease is generally considered as carcinomatous. The author is probably correct in regarding them differently, but we cannot think that the term cirrhosis, as applied to the affection, is a happy selection. It is a misfortune that this term came into use as applied to a peculiar affection of the liver; and writers have shown great unwillingness to follow Dr. Corrigan in his extension of the term to a particular condition of the lungs. We opine that the profession will not adopt its application to a gastric affection. Nor do we believe that the term *linitis* will be acceptable, as denoting inflammation of the areolar tissue of the stomach. This term (from the Homeric λινον, *rete ex lino factum*), with the addition of *plastic*, is employed by the author as a synonym for cirrhosis; and, with the word *suppurative* added, is applied to purulent infiltration of the gastric tissues. The latter he regards as an affection occurring consecutively to plastic linitis, the deposit being liquified by a suppurative process. Happily, these forms of disease are rare. The symptoms are not distinctive, and a diagnosis is hardly practicable.

We should be misapprehended, were it to be inferred from the tenor of the remarks introductory to this brief notice, that we consider Dr. Brinton's work as devoid of instruction. But we must confess to a feeling of disappointment, on comparing the actual practical information which the volume contains, with the author's representation of the pains which he has taken in preparing to make it instructive. It would be far more agreeable to bestow unqualified praise, than to express this sentiment. It is by no means essential to the usefulness of a work that it should contain much that is new or striking; and we should be less disposed to find fault, in the present instance, were it not that the style and method of the author are not always conducive to a very clear exposition of the subjects of which he treats.

A. F.

ART. XVI.—*Practical Observations on the Operations for Strangulated Hernia.* By J. H. JAMES, F. R. C. S., Consulting Surgeon to, and late Senior Surgeon of, the Devon and Exeter Hospital, Consulting Surgeon to the Exeter Dispensary. London, 1859. 8vo. pp. 95.

THE object of the author of this volume, as is stated in some preliminary observations, is, "to give, as briefly as possible, the result of his own experience, either as confirmatory of some, or as opposed to other, points of practice which may now be more or less in esteem, giving reasons for his opinions when they differ from those of others, and offering, in some instances, views which he believes to be new, though it is indeed difficult to say what is really so." The author himself is a surgeon of very considerable distinction; his book is evidently the work of a man possessing an excellent judgment and quite extensive experience; and it is upon a subject relative to which, notwithstanding all that has been written upon it, there are still many important points remaining unsettled.

Mr. James gives, in tabular form, *all* the cases in which he himself has operated for strangulated hernia; they are thirty-six in number, and it may be well to add that they run over a space of thirty-six years, the first operation having been performed in October, 1821, the last in May, 1858. They are divided into three separate tables—the recoveries, the deaths in private cases, and the deaths in hospital cases. The columns in the tables are headed—number of case, kind, age, sex, duration, strangulation, vomiting, constipation, tenderness of belly, tenderness of rupture, contents, bowels moved after the operation, and remarks. We would call attention to the fact, for reasons to be hereafter given, that no mention is made as to whether or not a truss had been worn, or as to what was the after dressing of the wound, and that the supposed seat of the stricture is not always stated.

Of the 36 cases operated upon by Mr. James, 24 were in hospital, 12 in private practice; of the latter, 6 died; of the former, 8; the total mortality, therefore, is 39 per cent. Most surgeons, we believe, will be disposed to regard this percentage as enormous, for we have again and again remarked that, generally, they are not accustomed to regard the operation for strangulated hernia as being attended with an amount of mortality greater than almost any other it falls to their lot to perform. One reason for this is, that almost all writers on the subject of hernia, until within comparatively a recent period, have spoken of the operation as an innocent one. One celebrated writer declares that it is only "a wound in the skin, the opening of a membranous sac, and the incision of an aponeurosis or of a membranous cord." Pott affirms that of fifty patients not one is lost when the operation is skilfully and properly performed. Boyer teaches that the operation is not dangerous in itself, and, when the issue is unfortunate, the death of the patient must be attributed to the inflammation and gangrene of the intestine rather than to the operation. One very sensible old writer, after remarking that he believes the universal notion of its innocence to be erroneous, argues against it on the ground that the viscera are exposed to the air and handled, which may probably be mischievous; that the thickened tunica vaginalis, the peritoneum, and the tendinous rings are laid open, and thickened membranes seldom digest but with some hazard; and then goes on to say: "But what is still a more convincing argument of its precariousness is, that many have

died after the operation, though performed long before the symptoms of an approaching mortification would probably have appeared."[1] This last argument, or the one drawn from experience, is the only one of any serious force whatever at the present day, when some surgeons would have the human system to digest everything, and hold it a trifle to open the belly from the sternum to the pubes. Let us see, then, what experience teaches in regard to the operation for strangulated hernia. Of 77 cases reported by Sir Astley Cooper, 36 proved fatal, or more than 46 per cent. Of 545 cases recorded in the journals, and collected by Dr. Turner, 260 are reported to have died, or nearly 48 per cent.[2] In the Paris hospitals, from 1836 to 1841, about five years, the disciples of Boyer—who, as just seen, teaches it not to be a dangerous operation—performed it 183 times; of these cases 114 died; 97 of these patients were from 50 to 80 years of age, and of these 70 died, or 72 per cent.[3] The results of Mr. James's operations compare therefore very favourably with any others we have access to, and the operation for strangulated hernia must be regarded as one of the most fatal in surgery.

A very considerable portion of Mr. James's little book is occupied with a discussion of the respective advantages of opening the hernial sac, or of leaving it intact, as in what is called Petit's method. We have been much pleased with the manner in which the matter has been argued, and particularly interested by the statistics, carefully criticized, that have been brought forward. There are, however, certain considerations, which we must deem of the highest importance, that have been passed over in silence, to our regret, and, in regard to one of them, we would add, to our astonishment. One great reason for not reducing the hernia without opening the sac—in fact, it is probably *the* great reason for not doing so—is, that the stricture, in certain cases, is situated in the neck of the sac itself, and the hernia is as much strangulated when within the abdominal cavity as when outside of it. This reason is not given by Mr. James. In entering upon the subject, Mr. James says: "The question naturally presents itself to every mind, why a method recommended by so great a surgeon as Petit, and supported by the opinion and practice of other eminent surgeons of his day, should have fallen into disuse, unless there were some cogent reason for it, founded on its ill success" (p. 5). The cogent reason is, that, not many years after Petit's operation came into general use, several surgeons found that in certain cases the symptoms of strangulation persisted after the reduction of the hernia, and autopsy showed the intestine strangulated in the sac, and by the neck of the sac itself.[4] Petit himself did not suspect that the intestine could be strangulated by the sac itself, as is readily seen by his manner of arguing in favour of his own operation, against the old one, called the operation of Franco, by which the sac was always opened. It was objected that his operation was difficult, but he answers that there is no question of difficulty when a thing is useful and possible; again, that the liquid of the sac would be emptied into the belly, where it would cause accidents, to which he answers that the taxis would do the same thing. As to making of his operation a general method, he declares that he has no intention of so doing; for, if he suspected the intestine to be gangrenous, or to contain any foreign bodies, he would open the sac for the purpose of examining.[5] There is no

[1] A Critical Inquiry, &c., by Samuel Sharpe, 2d edition, London, 1750, p. 18.
[2] The Science and Art of Surgery, by Erichsen, Am. edit., p. 728.
[3] See Malgaigne's memoir in the Archives Gén., 3e séries, vol. xii. p. 206.
[4] De l'Étranglement dans les Hernies, &c., par Broca, Paris, 1853, p. 94.
[5] Traité des Maladies Chirurgicales, Paris, 1790, vol. ii. p. 329 et seq.

question made anywhere as to a strangulation in the neck of the sac, which, as said before, is a discovery of later date. The surgeon at the present day, however, who should reduce a strangulated hernia without considering whether the stricture might not be at the neck of the sac, would not be giving his patient as good a chance of recovery as he ought to be desirous and able to do. It is on this account we called attention to the fact that, in his history of the cases, Mr. James never mentions whether or not a truss had been worn by the patient. When a truss has been worn, its pressure may have caused the formation of a neck to the sac, and the stricture may be there. Malgaigne, in his celebrated memoir on the subject, denies that strangulation is ever produced by the fibrous orifices through which the sac passes; and though this may be an extreme opinion, it is not, practically, so dangerous an one as that which ignores totally all strangulation except from these orifices. As respects the seat of stricture, in all the cases of femoral hernia Mr. James states that he found it corresponding with the edge of Gimbernat's ligament (p. 26), in inguinal hernia it is but rarely mentioned, and the internal and external rings, on different occasions, are both accused. It is curious to notice that while French surgeons almost invariably find the stricture at the external ring, the English, on the other hand, find it at the internal. Has not the fact that the internal abdominal ring was discovered by Sir Astley Cooper had much to do with the belief now prevalent in England? After all, all the surgeon can be sure of, in regard to the general seat of stricture in strangulated hernia, is, that he knows but little, with any certainty, in regard to it, but that the little he does know should prevent him from practising, as a general rule, Petit's operation, or returning the sac without having made himself sure that the stricture is not seated at the neck.

Mr. James not only believes that the fibrous rings are always the agents of constriction in strangulated hernia, but he believes, moreover, that they are *active* agents—that the constriction they exert is an active constriction. Opinions to the contrary he declares to rest more on assumption than absolute proof. "It is said that the ring itself is not muscular, therefore it cannot contract; but do no parts contract which are not muscular? A name often blinds us to facts. We have been long accustomed to connect contractile power with muscular structure, but let us take another case of strangulation, that of the glans penis in paraphymosis; the stricture here is undoubtedly caused by common integuments" (p. 29). General anatomy would readily point out the reason why the action of a fibrous ring should be very different from that of the common integuments, for in the latter muscular fibres are contained in abundance, in the former there are none. Only two additional arguments are mentioned in favour of the opinion that the constriction is active, one is the great difference there is in the degree of constriction in different cases, the other the great difference between the feel of the edge in the dead subject and in the hernia. The force of these arguments seems to us to be very doubtful. In some short observations upon the use of chloroform (p. 15), it is said that the opinions of those who do not allow any contractile power to the stricture must be rendered doubtful by the fact of its serving, for it must be mainly by relaxing the stricture, and the resistance of the abdominal muscles. The resistance of the abdominal muscles is certainly a very powerful agent in preventing the return of the protruded bowel, for, in contracting, they diminish the capacity of the abdominal cavity. Pressure exercised upon the tumour, in endeavouring to return the bowel by taxis, by causing pain,

augments the contraction of the muscles, and increases their resistance. Anæsthetic agents act by diminishing or entirely suspending the contraction of the muscles of the abdomen. This action of the abdominal muscles should be properly understood, for, in supposing them to act by narrowing the fibrous rings, surgeons compel their patients at times to assume positions not calculated to increase the size of the abdominal cavity.

The fact that the action of the rings is passive, and not active, is one of infinitely more importance than might be supposed by one who has not reflected seriously over the problems presented by what is styled *strangulated* hernia. Since the rings are passive, the hernial mass must increase in size in order to be strangulated, otherwise whatever came out of the opening would certainly go in again. The return of the bowel is prevented by a certain lesion that has occurred therein after the protrusion, and this lesion is a congestion of blood. If the opening be narrow, the slightest increase in size is sufficient to strangulate the bowel; if more considerable, a greater tumefaction is necessary; if very great, the swelling must be enormous. It is not our design to treat this subject at length at the present time; but, in order to illustrate our meaning, we will take a case from those styled *strangulated* in Mr. James's book, and make a few observations upon it. The case we select is No. 6 in the first table. "A man, 67 years of age; the hernia old; strangulation had lasted seven days; evacuation before the operation, probably accounted for by the stricture not being very tight, and the reduction prevented rather by the bulk of the cæcum than by the tightness of the stricture; belly tender; rupture tender; contents, cæcum and appendix; bowels moved the following day;" and, it is added, in the *remarks*, "notwithstanding the length of time strangulation had existed before admission, the symptoms were not urgent, and a warm bath was tried; that failing, the operation. The contents, cæcum and appendix, and a good deal of fluid at the bottom. The intestine was a lively red, showing that the stricture was not so tight as to prevent a free circulation, and there was a fur of lymph on the surface. The reduction was rendered difficult rather by the bulk of the cæcum than the tightness of the stricture." Now, is it proper to call this a case of *strangulated* hernia? As Mr. James himself says, in the sentence we quoted from him a moment since, "a name often blinds us to facts;" we call a disease strangulated hernia, and hasten to divide a stricture; if we called it *inflamed* hernia, would we not rather endeavour to diminish the inflammation by local and general measures, and then, when the inflammation shall have subsided, if the hernia be reducible, endeavour to return it to its normal position? It does not require much reflection to perceive that this question is not one of mere words, nor one of solely pathological interest, but a question that interests most deeply the life of the patient. Statistics already given have shown us that the operation for strangulated hernia is one of the most fatal in surgery, and we believe that the correct view of the question before us will spare many men the risk of its dangers.

In connection with the subject of the operations for strangulated hernia, it is curious to remark the retrograde movement which is being made at the present day by some rather prominent surgeons in various countries. The performance of operations for the radical cure of hernia is being again attempted, as was done in former times, before the invention of the truss. It is true that invagination and an injection of iodine are improvements upon the *punctum aureum* and the royal stitch; yet their performance at the present day must be regarded as unnecessary, and therefore as reprehen-

sible. By the most successful methods of operating, it is shown that death occasionally results, and this is quite sufficient to render the attempt unjustifiable. In place of publishing their statistics with pride, surgeons should be ashamed of them. How different is the manner in which Petit recounts the cases in which he attempted the radical cure of hernia! Although he lost but one patient, he cannot forgive himself. Surgery, at the present day, may have advanced so far as perfection of method is concerned, but the great moral principles by which operators should be guided do not seem to be so well understood nor so well regarded. At all events, notwithstanding all the modern improvements in operations for the radical cure of hernia, we must still exclaim with Petit, speaking of the truss, "on peut dire avec verité, que ce moyen d'assujettir les parties est un des plus grands présens que l'art ait fait à l'humanité." W. F. A.

BIBLIOGRAPHICAL NOTICES.

ART. XVII.—*Reports of American Institutions for the Insane.*

1. *Of the Maine Insane Asylum, for* 1858.
2. *Of the Massachusetts State Hospital, at Worcester, for* 1858.
3. *Of the Massachusetts State Hospital, at Taunton, for* 1858.
4. *Of the Massachusetts State Hospital, at Northampton, for* 1858.
5. *Of the Northern Ohio Lunatic Asylum, for* 1857.
6. *Of the Central Ohio Lunatic Asylum, for* 1858.
7. *Of the Southern Ohio Lunatic Asylum, for* 1858.
8. *Of the Hamilton County (Ohio) Asylum, for* 1858.
9. *Of the Michigan Asylum, for* 1857–58.
10. *Of the United States Government Hospital, for* 1858.
11. *Of the Insane Asylum of North Carolina, for* 1857 *and* 1858.
12. *Of the State Lunatic Asylum of South Carolina, for* 1857.
13. *Of the Mississippi State Lunatic Asylum, for* 1857.
14. *Of the Insane Asylum of Louisiana, for* 1857 *and* 1858.
15. *Of the State Lunatic Hospital of Texas, for* 1857.
16. *Of the State Insane Asylum of California, for* 1857.

1. THE Report of Dr. Harlow, Superintendent of the *Maine Insane Asylum*, contains the subjoined information in regard to the patients during the fiscal year terminating with the 30th of November, 1858 :—

	Men.	Women.	Total.
Patients at the beginning of the year . . .	118	90	208
Admitted in course of the year	72	54	126
Whole number " "	190	144	334
Discharged, including deaths	73	53	126
Remaining at the end of the year . . .	117	91	208
Of those discharged, there were cured . .	37	22	59
Died	10	14	24

Died of consumption, 6; marasmus, 4; exhaustion, 3; continued fever, 3; congestion of the brain, 2; disease of the heart, 2; dropsy, 1; paralysis, 1; diarrhœa, 1; epilepsy, 1.

No epidemic disease appeared in the course of the year. "The number of patients has never been larger. Early in the summer the male department was filled to its utmost limit, obliging us to delay the admission of new patients until vacancies should occur."

"Among the many pathological conditions of the physical system connected with insanity," remarks Dr. Harlow, "there is none more common than a deranged state of the stomach and bowels. Rarely do we meet an insane person in whom we do not find an irregular appetite, indigestion, and constipation. Not unfrequently these symptoms exist for a long time previous to the development of mental disturbance, and are, as we believe, among its primary causes, which, with early attention and proper treatment, might be removed, and save the individual from becoming an unfortunate victim to this disease. * * * Nothing tends so much to change the stomach from a normal to an abnormal condition, as the present dietetic habits of our people; and, as the brain is in immediate connection and sympathy with the stomach, its effect upon the former is obvious. * * * Certain it is that the manliness and comfort of continued intellectual strength—the normal perception and virtue of the mind, depend upon a proper physiological diet." He quotes from Dr. Abernethy—"I tell you honestly what

is the cause of the complicated madness of the human race: it is their gormandizing, and stuffing, and stimulating the digestive organs to excess, thereby producing nervous disorder and irritation;" and then proceeds: "The foundation of gastric disease is not unfrequently commenced in childhood, by the use of highly concentrated and improper food. The common practice of feeding children with aliment scarcely fit for the stomach of an adult, deserves the careful consideration of all parents. Its effect on the mental and physical growth of the child is greater than is generally imputed to it. Much of the feeble health so prevalent at the present day, may be traced to improper habits of diet." Of tobacco, he says: "Its pernicious effect upon the brain and nervous system is obvious to all who are called to treat the insane. A large class of our patients have been inveterately addicted to its use, and in many cases it has been a prominent cause in developing the disease."

Patients admitted since the hospital was opened, in 1840	1,978
Discharged cured	813
Died	250

A benevolent person has left a legacy to the institution for the purpose of forming a library for the patients, and during the past year a part of the fund has been expended in the purchase of upwards of six hundred volumes. Near the close of the report, there is a list of about thirty newspapers and periodical publications which are sent to the hospital gratuitously.

2. Since the opening of the new *State Lunatic Hospital* in Massachusetts, there has been a general transfer of patients, so that each of the three hospitals will, as far as practicable, have the care of those whose residence is within that section of the State in which it is situated. The Report of the *Hospital at Worcester*, contains the subjoined account of these transfers, so far as that institution was concerned.

	Men.	Women.	Total.
Removed to the Hospital at Northampton, August 16th, Sept. 20th, and Sept. 30th, 1858	67	75	142
Removed to the Hospital at Taunton, Sept. 2d, 1858	3	4	7
Whole number removed by transfer	70	79	149
Received from the Hospital at Taunton, Aug. 30th and Sept. 17th, 1858	21	37	58
Received from the Boston Lunatic Hospital	12	19	31
Whole number received by transfer	33	56	89
Diminishing the numbers at Worcester	37	23	60

These admissions and discharges are included in the following table of statistics for the period covered by the report.

	Men.	Women.	Total.
Patients in the hospital, December 1, 1857	177	195	372
Admitted in ten months	142	165	307
Whole number	319	360	679
Discharged, including deaths	180	196	376
Remaining September 30, 1858	144[1]	160[1]	301[1]
Of those discharged, there were cured	55	72	127
Died	18	16	34

Causes of death.—Consumption, 6; epilepsy, 6; palsy, 6; marasmus, 5; old age, 3; typhomania, 3; meningitis, 2; asthma, 1; pneumonia, 1; typhoid fever, 1.

"In the spring there were several cases of fever. During the summer and autumn there has been severe diarrhœa and dysentery, generally of a mild character, and yielding to proper remedies. * * * Three persons died within the ten months which this report embraces, who were more than eighty years of age. Four were between the ages of 70 and 80 years, and six between the ages of 65 and 70 years. * * * Two patients died within thirty-six hours after admission."

[1] According to the preceding numbers, these three items should be 139, 164, 303.

The difficulties and the annoyances consequent upon the association of patients of foreign birth with those who are natives of America, have in several instances been portrayed in the reports emanating from our establishments for the insane. The means adopted at the Worcester Hospital to avert these evils, and the results of the course pursued are thus noticed by Dr. Bemis :—

"During the last year a complete separation has been maintained between the foreign and native patients, much to their mutual satisfaction and benefit. The foreign patients have the same comforts and accommodations, the same grade of attendants, and receive the same care and attention that native patients do. But looking at the welfare of the patients, there seemed to be good and sufficient reasons for a separation. When in health they separate themselves. They have but few feelings in common with each other. Opposite in religion, and all the notions of social life, it would not be well to class the two races in the same wards, where each must bear from the other what was considered troublesome and offensive while in health."

From its commencement the hospital at Worcester has been one of the most conspicuous in the United States, in regard to the extent to which patients have been employed in useful manual labour, both within doors and without. On the other hand, but few institutions have been supplied with more numerous resources for recreation and amusement, or have more extensively and systematically made use of them. Among these are mentioned—riding, walking, cultivation of flowers, care of pets, birds, &c., parties, dancing, music, cards, draughts, dominoes, graces, battledoor, ball, cricket, quoits, books, maps, newspapers, pictures, and the magic lantern. Among the prospective aids in the moral treatment are, a green-house, reading-room and museum, billiard tables, and a calisthenium.

This report is distinguished by one feature which, so far as we recollect, has not been presented by any other publication of the kind in the United States. We allude to a summary of the pathological appearances of all the cases in which a *post-mortem* examination was made during the period embraced by the report. Of these, in the present instance, there were thirteen. We desire to call attention to three of them, in regard to their bearing upon a recent attempted definition of insanity, which has been promulgated with the intention of furnishing a test in cases of alleged mental alienation in persons accused of felony.

	Duration of insanity.	Cerebral membranes.	Cerebral substance.
Case 1st.	One year.	No unusual appearance.	Healthy to appearance.
Case 4th.	Twenty years.	Nothing unusual.	To appearance perfectly healthy.
Case 12th.	Three weeks.	Apparently healthy.	Not changed.

Disease of the brain is the essence of the definition alluded to; and its availability, as a test in medical jurisprudence, depends upon the existence of external physical signs or symptoms which are pathognomonic of cerebral disease. Here, however, of thirteen cases, we have three in which no lesion of the brain was manifest even upon inspection. We would simply ask if, under such circumstances, there be any physician who, in a case where life is at stake, would swear that there was no insanity, because he could not detect physical symptoms which, in his view, are pathognomonic of encephalic disease?

3. The most important numerical results contained in the report of the *Massachusetts State Lunatic Hospital*, at Taunton, for the fiscal year ending September 30, 1858, are as follows :—

	Men.	Women.	Total.
Patients at the commencement of the year . .	177	150	327
Admitted in course of the year	120	103	223
Whole number	297	253	550
Discharged, including deaths	141	108	249
Remaining at the end of the year . . .	156	145	301
Of those discharged, there were cured . .	52	32	84
Died	25	15	40

Deaths from phthisis, 17; maniacal exhaustion, 4; paralysis, 4; diarrhœa, 4; softening of the brain, 3; apoplexy, 2; anæmia, 2; epilepsy, 2; fever, 1; chronic mania, 1. "The four fatal cases of diarrhœa were all of a chronic character, occurring in demented patients, and depending partly on the original disease in the nervous centres, and partly on the habits of the individual."

In respect to the causes of insanity, Dr. Choate says: "The number of cases arising from intemperance, that most prolific of all causes, has somewhat diminished during the past year; while those from religious excitement have considerably increased." The labour and the anxiety consequent upon an endeavour, by a large portion of our population, to improve their condition and elevate their social position; and the "unwise system of educating the young," are specially mentioned as powerful agents in preparing the brain and the nervous system for an easy invasion of mental disorder.

Of the 223 patients admitted, 100 were foreigners. The proportion of the latter class is less than in the last preceding fiscal year.

"No criminals have been sent to us (this year) from the correctionary institutions. * * * I cannot but cherish the hope, that in Massachusetts the last criminal has been removed from her State prison, to find a place among her respectable but unfortunate insane."

"In the large majority of curable cases, all visits of friends do harm, and retard the cure. And yet it is often extremely difficult to forbid them, and to withstand firmly the appeals of affection and kindred, without appearing hard-hearted and unfeeling. There is, however, but one course for a conscientious physician to pursue."

"At times, considerably more than one-half of the female patients have been employed, usefully to themselves and profitably to the institution."

"Happiness is not rare in a lunatic hospital, and the cases of content and supreme felicity are frequent enough to bring up the sum of enjoyment, among the insane, not to the same average as among the sane, but to a less distant approximation to it than is generally supposed. The sound of merriment, the game pursued with eager zest, the music and the song, the dance, and the gay jest and repartee, which may be seen and heard in our halls, are evidences of enjoyment which show that an all-wise Creator, in afflicting his creatures, has still left them not wholly without solace."

As bearing upon the question of the influence of marriages of consanguinity in the production of mental disorder among the offspring, Dr. Choate remarks that "the fact that the island of Nantucket, containing a population of eighty-five hundred, and isolated in a measure from the rest of the world, where circumstances of position and convenience must have made such intermarriages exceedingly common, has sent but two patients to this institution during a period of five years, would seem to show that this cause has less influence in the production of insanity than it undoubtedly has in that of idiocy, and impairment of the senses of sight and hearing."

4. The third *State Lunatic Hospital of Massachusetts*, under the superintendence of Dr. William Henry Prince, was opened for the reception of patients, on the 16th of August, 1857. This establishment is about one mile westwardly from the centre of the town of Northampton. The farm contains one hundred and seventy-five acres. The hospital is nearly in the centre of it, upon a commanding elevation. "It is protected on the north and northeast by a dense grove, but has on the east and southeast an extensive open lawn, over which is an unobstructed view of the town of Northampton, and the Holyoke range of mountains, of the broad meadows bordering on the Connecticut River, and the town of Hadley on the opposite bank; and beyond, and higher up the hill-side, of Amherst, and its college buildings." The ground-plan is the broken linear, consisting of a central edifice and three wings upon either side.

The building is of brick, the roof slated; the style of architecture that which is known as the Elizabethan. The number of rooms appropriated to patients and their immediate overseers is two hundred and ten. Six of them are associated dormitories, with ten beds each, and six others have each two beds. Two hundred and fifty patients can be comfortably accommodated, and the

arrangements are such that those of each sex can be separated into twelve classes. The building is lighted by gas, heated by steam, and forcibly ventilated by a wheel fan. It is supplied from the adjacent river with water, which, propelled by a forcing-pump, is received by tanks in the attic, the united capacity of which is upwards of twenty thousand gallons. "With our elevated situation," says the report, "dry soil, good drainage, good water, good ventilation, and freedom from crowded halls, we should be exempt from the attacks of those epidemics which are so often the scourge of hospitals differently situated in these respects."

The opening of this institution was the signal for a hegira of patients from some of the other similar establishments in the State. On the 16th of August fifty one were removed to it from the hospital at Worcester; on the 7th of September, sixty-eight from that at South Boston; on the 20th of September, sixty-three, and on the 30th of the same month, twenty-eight, from that at Worcester. Meanwhile, eighteen patients had been received from other sources. Thus, in the short time of forty-six days, the building became peopled with 228 insane persons, most of them transported in large numbers and without accident. Of these patients, the mental disorder of only thirteen was of less duration than one year. The prospect for the recovery of many of them is consequently discouraging.

The report before us is dated on the 30th of September, the day upon which the last instalment of patients was received from Worcester. Eight patients, 6 males and 2 females, had been discharged. No one was cured, and no one had died. The number remaining was 220, of whom 93 were males, and 127 females. Of the number admitted, only 56 were Americans. The others were, Irish 160, Germans 6, English 3, Scotch 1, Italian 1, Portuguese 1.

No mechanical apparatus for restraint had been placed upon the body or limbs of any patient. The various resources for moral treatment were being introduced. Religious exercises on Sunday, and on the evening of each week-day, had been established. A library was commenced, and had received several donations of books. The means for various games had been supplied. Many of the male patients had been employed upon the farm, and many of the females in the various departments of domestic labour.

5. The general items of the medical record of the *Northern Ohio Lunatic Asylum*, for the fiscal year terminating with the close of October, 1857, are as follows:—

Patients in the asylum October 31, 1856	141
Admitted in the course of the year	140
Whole number	281
Discharged, including deaths	133
Remaining, October 31, 1857	148
Discharged, cured	75
Died	4

"Our amusements," remarks Dr. Hopkins, "have been varied. Dancing, lectures, plays, and concerts have alternated. The chaplain has continued his ministrations on the Sabbath, and conducted the family worship during the week-day evenings. Attendance upon these services is entirely voluntary."

A subject which has already occupied our attention, in the progress of these *notices*, is discussed in the report now before us. We allude to the abuse of institutions for the insane by making them the receptacles of criminals alleged to be insane. "The first intimation," says the report, "we have of the fact that their removal from the penitentiary is contemplated, they are at our doors; and even though every bed in every ward may be full of the most deserving cases, we must receive them, and order the discharge of some unfortunate, but not vicious, one or more to make the required room. Nor is this an idle picture. Soon after the date of the last report, three convicts were sent us from the penitentiary at Columbus, said to be insane. Of their coming I knew nothing until they landed at our door. The house was already crowded as full as comfort would dictate, but room must be found for them. One of them I was pretty

well satisfied, after watching him a few days, was only simulating disease, and in this opinion I was confirmed at the end of two weeks by his successful effort to escape. I subsequently learned he had played the same game, once at least, before, in another State. The other two are doubtless insane, the victims of masturbation. One of them, being of that impulsive character so common to that class, once made an unsuccessful attempt upon the life of an attendant. As usual with them, this attempt was entirely unprovoked and unlooked for."

We have always believed that the admissions of strangers, in any considerable numbers, as casual visitors to the halls occupied by patients, is productive of injury, unrelieved by any adequate compensative good. It would appear from the subjoined extract, that the experience of Dr. Hopkins has not led him to the same conclusion.

"That the community might become familiar with the real character of the asylum, we have permitted, and indeed encouraged, pretty free visiting of the house. In no instance has any evil resulted to patients from this source. The people feel that it is their house, and none know how soon they may want its protection for themselves or family; hence the more familiar with its character the less reluctance to availing themselves of its care."

Yes, the people *do* "feel that it is their house," but do they also feel that if they themselves, by an unfortunate necessity, were confined in it, they would like to be stared at by every person whom an idle curiosity might induce to enter its halls?

6. In reading the report for 1858, of the *Central Ohio Lunatic Asylum*, at Columbus, we have been forcibly impressed with the conviction that its present official authorities are sincerely and actively engaged in the endeavour to make it as nearly perfect as, with the means at their disposal, and the architectural arrangements of a building erected prior to the development of the many improvements of the last twenty years, will permit. Judging from their record of what has been done in the course of the past year, the details of which are so numerous as to forbid the recapitulation of them in this place, the work of regeneration goes bravely onward. May the shadows of those officers never be less!

	Men.	Women.	Total.
Patients in the Asylum, November 1st, 1857	119	140	259
Admitted in course of the year	86	89	175
Whole number	205	229	434
Discharged, including deaths	68	111	179
Remaining Nov. 1, 1858	137	118	255
Of those discharged, there were cured	40	61	101
Died	10	9	19

It appears that the moral treatment of the patients is conducted with activity and efficiency. Religious exercises in the chapel are continued daily. These exercises are mentioned by Dr. Hills as being useful in promoting propriety of deportment, which is an aid in giving the patient encouragement, confidence, and self-respect. "A large portion of the insane are conscious that something is wrong with them. This is often the case when they do not admit it in language; and the consciousness of having behaved properly brings with it the conviction that an effort on their part has succeeded, and may succeed at other times."

As "the books once accumulated have mostly disappeared," an appropriation of one thousand dollars is requested for the purchase of a library for the use of the patients. Sixty-three newspapers and periodicals, published in various parts of the State, are received gratuitously. Illustrative apparatus having been purchased, a course of lectures was commenced in the autumn, with the design of continuing them, once in each week, through the winter. One evening in each week is also devoted to "a mixed entertainment of music and dancing." Most of the farm labour is performed by patients. The products of the farm, the past year, are valued at $1,665. "In the laundry and sewing-room the female patients have been actively and beneficially engaged as heretofore; and in the halls a large amount of work is accomplished, and a commendable

spirit of rivalry frequently exists between halls, in plain and fancy sewing, knitting, quilting, &c. This spirit of cheerfully contributing, by industry, to the general welfare of the household, is very much dependent upon the spirit of the attendants. The feelings of the patients thus become the index of the disposition of the attendants. So true is this, that when we find a class of patients becoming negligent, and finally averse to industrial pursuits, we know at once where to look for its source." In the course of the year, 3991 articles of clothing and of household linen were made.

The Central Asylum received its first patients on the 30th of November, 1838. This report is dated on the 1st of November, 1858. The intervening period was twenty years, less twenty-nine days. Dr. Hills has very properly seized the occasion to make a numerical summary of all the cases which have been treated in the Asylum. The most important information thus derived is copied below.

	Men.	Women.	Total.
Whole number of patients admitted	1680	1620	3300
Discharged recovered	835	852	1687
Died	244	184	428
Admissions in spring			811
" summer			820
" autumn			922
" winter			747
Deaths in spring			103
" summer			133
" autumn			92
" winter			100
Single			1475
Married			1612
Widowed			209
Unknown			4
From 20 to 30 years of age when admitted			1208
From 30 to 40 " "			915

Of patients between 40 and 50 years of age, at the time of admission, the recoveries were 56.09 per cent.; between 20 and 30 years, 51.77 per cent.; between 30 and 40 years, 50.63 per cent.; between 50 and 60 years, 47.16 per cent.; under 20 years, 45.17 per cent.; between 60 and 70 years, 40.62 per cent.

Causes of death.—Consumption, 72; inflammation of the lungs, 11; chronic inflammation of the bronchia, 1; hydrothorax, 4; paralysis, 8; paralysie générale, 5; apoplexy, 17; epilepsy, 34; organic lesions of the brain, 12; inflammation of the brain, 2; acute mania, 1; maniacal exhaustion, acute, 30; maniacal exhaustion, chronic, 10; typhomania, 6; inflammation of the pericardium, 2; disease of the heart, 4; inflammation of the stomach, 3; diarrhœa, 35; dysentery, 32; ulceration of the bowels, 3; organic disease of the stomach, 1; hemorrhage from the bowels, 3; inanition, 26; marasmus, 29; atrophy, 5; exhaustion and general decay, 3; dropsy, 5; chronic inflammation of the peritoneum, 3; inflammation of the liver, 3; bilious colic, 1; fever, 23; anæmia, 6; confluent smallpox, 1; erysipelas, 3; cutaneous cancer, 1; cancer of the womb, 1; inflammation of the kidneys, 1; gangrene of the face, 1; caries of the vertebræ, 1; exhaustion from journey, 2; suicide, 9; cause not assigned, 2.

7. Dr. McIlhenny, of the *Southern Ohio Lunatic Asylum*, gives the following record of the movement of the patients at that institution during the fiscal year terminating November 1, 1858.

	Men.	Women.	Total.
Patients at the beginning of the year	77	84	161
Admitted in the course of the year	62	54	116
Whole number	139	138	277
Discharged, including deaths	58	59	117
Remaining at the end of the year	81	79	160
Of those discharged, there were cured	41	32	73
Died	7	10	17

Causes of death.—"Mania," 4; apoplexy, 3; epilepsy, 2; pharyngeal abscess, paralysis, measles, disease of kidney, valvular disease of heart, pulmonary consumption, old age, and pneumonia, 1 each.

"The patient who died of pneumonia was brought to the institution in the last stage of that disease, totally unconscious of everything around her, and with well-marked muttering delirium. She survived the journey hither only a few hours."

Twenty of the patients received in the course of the year had attempted suicide prior to admission. The means employed, together with the number resorting to each, are as follows: jumping from windows, 2; poison, 3; drowning, 4; starvation, 2; suspension, 4; cutting throat, 4; burning, 1; strangulation, 1.

"The proper keeping of the criminal insane is a subject of more interest, perhaps, than many suppose. When a criminal is declared insane, it becomes the duty of the Governor to cause the removal from the State prison to one of the lunatic asylums. The association of this class of persons with the other patients in the hall, we have found to have a very unpleasant effect upon both."

Twenty-five newspapers are sent gratuitously to the asylum. In the course of the past year a reading-room was prepared, in which the best of these publications are kept on file, and to which many of the patients resort. "Our present stock of books," remarks Dr. McIlhenny, "is so small that I am ashamed to be compelled to tell visitors that it is the offspring of the great State of Ohio."

In this report, as in the similar recent publications of nearly all the American institutions for the insane, there is an acknowledgment of the receipt of pictures from that persistent friend and benefactor of the sufferers from mental disorder, Miss D. L. Dix.

"It has been our constant care and desire to employ as many patients as possible in some kind of daily labour. Besides those who worked upon the grounds and in the garden, a considerable portion of the male apparel has been made by tailors who were patients in the house. Much of the repairing in and about the house has also been done by carpenters who were inmates. Quite a number of females daily spend a few hours in the sewing-room, where, with the assistance of one sewing girl, we have been able to manufacture the necessary articles of clothing for the greater part of the house."

An appropriation of one thousand dollars is requested for the purpose of erecting a workshop, in which carpenters, tailors, and shoemakers can be employed.

8. The subjoined numerical results at the *Hamilton County* (Ohio) *Lunatic Asylum*, are taken from the report of that institution for the last fiscal year.

	Men.	Women.	Total.
Patients in the asylum, June 5, 1857 . . .	84	95	179
Admitted in course of the fiscal year . . .	98	60	158
Whole number	182	155	337
Discharged, including deaths	70	37	107
Remaining June 5, 1858	112	118	230
Of those discharged, there were cured . .	36	10	46
Died	7	5	12

Causes of death.—Phthisis, 4; exhaustion of mania, 2; typhoid fever, 2; congestion of brain, 1; delirium tremens, with pneumonia, 1; epilepsy, 1; suicide, 1.

"Erysipelas at one time made its appearance in one of the male wards, and for a time assumed rather a threatening aspect, but it soon subsided without producing any fatal effects. With this single exception, we have had no disease prevailing in an epidemic form. Most other cases of sickness were of those adynamic forms of disease always incident upon large collections of old and debilitated persons, in crowded and badly-ventilated apartments."

Of the patients discharged, thirty-one were removed to the asylum at Dayton; and of those admitted, twenty-one incurables were returned from two of the State institutions—seven from that at Dayton, and fourteen from that at Columbus.

Dr. Mount very properly remarks: "It could not be expected that from a county asylum like ours, filled up as it is with idiots, imbeciles, and lunatics that have for years been accumulating upon the county, and is still the receptacle for all cases returned as hopeless from our State institutions, making it rather a retreat for the incurable than a hospital for the treatment of recent cases, that a very large percentage of cures would be effected."

This asylum was established, as a separate institution, but about five years ago. The patients are placed in temporary buildings, pending the erection of a permanent edifice which has been commenced. For these reasons the establishment has not attained that excellence in the detail of appliances and means of treatment which are found at our first-class institutions. Dr. Mount mentions "weekly music and dancing parties" as the only source of amusement for the patients. He thinks that these have been "attended with manifestly good results." "The only books," says the report, "our patients get to read, are supplied from the private libraries of the officers of the asylum, and for the newspapers published in our own county, we pay the usual subscription price." The latter assertion is in striking contrast with the fact that in the reports of most of the public institutions, long lists of papers sent to them gratuitously are published.

"As we have a larger number of inmates," continues the report, "than any similar institution in Ohio, we hope our benevolent citizens engaged in dispensing books, tracts, papers, and other reading matter, whose beneficence, scorning the narrow limits of our own State or country, extends to foreign climes, may not forget the old but very trite maxim, that charity begins at home; and while the inhabitants of 'Borrioboola Gha, on the left bank of the Niger,' are well supplied, this unfortunate class of persons at home may not be altogether overlooked."

	Men.	Women.	Total.
Whole number of patients since the asylum was opened	418	331	749
Discharged, cured			183
Died			60

9. It is eleven years since the government of Michigan authorized the establishment of an institution for the insane in that State. We have already given a description of the farm which was purchased for the purpose, at Kalamazoo. The building was commenced five years ago. In the report now before us, the trustees assert that "when finished, no other institution in our country will be provided with more perfect facilities for the complete classification of its patients, and the entire separation of the sexes." We believe that all persons conversant with the subject who have examined the plan of this hospital, agree in the opinion that it is one of the very best in America. A portion of the department for men, sufficiently commodious to receive ninety patients, has been completed, and it is determined to open this part, for the reception of men alone, before the remainder of the edifice is finished. Dr. E. H. Van Deusen, formerly assistant physician at the Utica Asylum, assumed the active duties of the office of superintendent of this institution, in October, 1857, "in order to supervise its internal arrangements, and to assist and advise in preparing for its opening."

The completion of the whole edifice has been delayed by one of those untoward accidents which the most assiduous watchfulness and care cannot always prevent. On the evening of the 11th of February, 1857, the main, or central building was destroyed by fire.

10. The report before us from the *U. S. Government Hospital for the Insane*, embraces the official year which terminates with the 30th of June, 1858.

	Men.	Women.	Total.
Patients in the hospital at the beginning of the year	60	50	110
Admitted in course of the year	29	14	43
Whole number	89	64	153
Discharged, including deaths	24	12	36
Remaining at the end of the year	65	52	117
Of those discharged, there were cured	13	5	18
Died	7	6	13

Causes of death.—"Chronic organic and functional degeneration of the brain, irregular in character and extent, 4; the same, with fistula in ano, 1; with phthisis, 5; with epilepsy, 1; exhaustion of chronic mania, 1; exhaustion of acute mania, 1."

The average duration of the mental disorder, in those who died, was 4.7 years. The average duration of the disorder, in the 43 cases admitted, was 1.85 years, which is 3.85 years less than the similar average in the cases received during the preceding year. Thus there is, in the language of Dr. Nichols, "a gradual movement towards a larger proportion of more recent, hopeful, and interesting cases than those with which the house was filled when it was opened, in January, 1855." As one patient was admitted twice in the course of the year, the whole number of *persons* who were patients was 152. Of these, 27 were from the army, 13 from the navy, 2 (pensioners) from the "Soldiers' Home," and 110 from civil life. Sixty-nine were of foreign birth.

The entire design of the principal edifice of this hospital embraces a central building and two wings, each of which is divided into six sections. Five sections of the westerly wing are completed and occupied. The sixth section of the same wing, the central building, and two sections of the easterly wing are in progress, and will probably be finished in the summer of 1859. At the date of this report (Oct. 1, 1858), no appropriation had been made for the construction of the remainder of the edifice. Since the issue of the last preceding report, Dr. William P. Young, the assistant physician, has resigned the office, and Dr. S. Preston Jones, formerly assistant physician at the State Lunatic Hospital at Harrisburg, Pennsylvania, has been elected as his successor.

11. On the 1st of November, 1857, Dr. Fisher, of the *Insane Asylum of North Carolina*, made a very brief report, chiefly devoted to the financial and architectural interests of that new institution.

	Men.	Women.	Total.
Patients in the asylum, Nov. 1st, 1856			80
Admitted in course of the year			89
Whole number			169
Discharged, including deaths	33	5	38
Remaining, Nov. 1, 1857	80	58	138[1]
Of those discharged, there were cured			13
Died			7

The subjoined numbers are from the report for 1858.

Patients, Nov. 1st, 1857	80	58	138
Admitted in course of the year	41	16	57
Whole number	121	74	195
Discharged, including deaths			49
Remaining, Nov. 1st, 1858			146[2]
Of those discharged, there were cured	14	10	24
Died			9

"With the exception of a mild endemic form of dysentery, which prevailed during the months of May and June, the health of the inmates has been remarkably good."

During the year, the average number of male patients employed in various departments of labour was forty, "while as large a number of females have been engaged in sewing, knitting, &c." Among the means for improving or enlarging the system of moral treatment, which Dr. Fisher mentions as especially needed, are a library, a magic lantern, a bowling alley, and a workshop. One of the

[1] Correctly deduced from the foregoing figures, this should be 131.

[2] This number is derived from the preceding figures. Dr. Fisher makes no direct statement of the number of patients remaining in the house, but in his general table, the word "Remains," or its equivalent, stands against the names of only 139. Hence it appears that the error, or discrepancy, of 7, which in some way was introduced into the numerical report for 1857, is continued through that of 1858.

female patients was so impressed with the want of books that, after her discharge, she collected, by subscription, "a sum sufficient for the purchase of a library for the ward which she occupied while an inmate of the asylum." Eleven newspapers are received gratuitously. Religious services are performed on Sundays, in the chapel, the clergymen of the city of Raleigh officiating in rotation.

The apparatus for lighting the building with gas was finished in the early part of the year. During the same period many other improvements, "both within and without the main building, and materially affecting the comfort and well-being of the entire institution, have been completed."

12. It appears that the proposition, discussed for several years, of erecting a new edifice, at a distance more remote from the city than that which is now occupied for the *State Lunatic Asylum of South Carolina*, has been decided in the negative. At the date of the present report, an enlargement of the building was in progress. This addition will "embrace all the improvements which experience has suggested. * * * The completion of this building, and the enlargement of the grounds of the asylum, by inclosing the street which now separates the two portions of them, will add greatly to the comfort of the patients, and the efficiency of the institution. * * * Our classification will be as complete as in any other institution of a similar character."

Patients in the asylum, Nov. 5, 1856	187
Admitted in course of the fiscal year	69
Whole number	256
Discharged, including deaths	63
Remaining, Nov. 5, 1857	193
Cured	35
Died	21

Deaths from chronic diarrhœa, 5; general dropsy, 2; apoplexy, 2; consumption, 2; epilepsy, 2; exhaustion, 2; dropsy of the chest, 1; dysentery, 1; disease of the heart, 1; pneumonia, 1; general paralysis, 1; internal abscess, 1.

"The past year," observes Dr. Parker, "has been one of remarkable exemption from evils which are by no means uncommon among the insane; contentment seemed to pervade our household, and was a subject of remark by strangers who were permitted to pass through our wards. * * * * It is with peculiar pleasure I state the fact that, during the past year, we have seldom had to confine a patient to his or her room for more than a few hours, and but in two instances has mechanical restraint been used. On those occasions it was absolutely necessary to confine a sick patient to bed who was averse to lying down, and was suffering from the effects of too long standing on his feet."

A sewing society has been formed in the female department, and "the regular sale of their handiwork has enabled them to put the chapel in complete order, and to have left in their treasury an increasing fund, to be hereafter disposed of according to their wishes. Besides the fancy work, one thousand nine hundred and ninety-five garments, household linen, &c., have been made for the use of the patients. * * * Morning and evening walks, the flower-garden, green-house, exhibitions with the magic lantern, music, bagatelle table, and other pleasant games are brought into use, all exerting a healthful and beneficial influence. * * * * I regret that with the male members of our family circumstances are not so favourable. The farm, garden, and general work about the house, afford employment to about twenty-five. Many others will be engaged at the mechanic arts as soon as arrangements can be made for their accommodation. The benefit which occupation, especially such as is accompanied with manual labour, affords in restoring the mind to cheerfulness and health, is incomparably superior to any other means resorted to for the benefit of the insane. * * * Religious service is another important means in the moral treatment of the insane. My observation enables me to testify to its soothing and cheering influence upon a large proportion of our patients. * * * These services have been judiciously and regularly dispensed during the year."

13. Dr. William S. Langley, formerly superintendent of the *Mississippi State Lunatic Asylum*, resigned his office in 1857, and was succeeded by Dr. William B. Williamson, "a gentleman," say the trustees of the institution, "of high professional repute, and in all respects worthy of public confidence."

	Men.	Women.	Total.
Patients admitted from the opening of the asylum, Jan. 8, 1855, to November 1, 1857	93	57	150
Discharged, including deaths	46	21	67
Remaining, Nov. 2d, 1857	48	35	83
Of those discharged, there were cured	21	5	26
Died	8	9	17

In allusion to the statistics, Dr. Williamson says: "It may be supposed that the recoveries are small, and the number of deaths large in proportion to the cases treated, as compared with other and older institutions; but this may be accounted for from the fact that many of the cases were of long standing, and were exhausted by chronic mania before they were admitted. Of the recent cases, fully eighty per cent. have recovered. During the spring and summer of this year (1857) there were some cases of erysipelas in the house, but the disease did not extend to a great number of patients. There have occasionally been cases of diarrhœa, and also of dysentery, and recently one pretty severe case of pneumonia, which is now recovering. Some few of the inmates have also been attacked with influenza, which has prevailed so extensively over the country during the last few months. The cases were, however, mild and easily managed. At present we are pleased to say that the bodily health of the household is good."

"Regular employment, both bodily and mental, is a highly important remedial agent for the restoration of the insane. * * * Many of the male patients have already done a considerable amount of labour in clearing off the undergrowth within the outward inclosure, and in moving away the rubbish, and grading about the buildings; while the females have been employed in making up clothing, and various articles necessary to be used in the dormitories." The collection of a library is recommended. "The buildings which were required to supply the place of those destroyed by fire, in the spring of 1856, are not yet finished," but are in rapid progress.

14. In April, 1857, Dr. J. D. Barkdull was elected by the Board of Administrators of the *Insane Asylum of Louisiana*, as the physician and superintendent of that institution. His report, bearing date January 1, 1858, is comparatively brief, including but few topics of interest to the general medical reader.

	Men.	Women.	Total.
Patients in the asylum, Dec. 31, 1856	49	53	102
Admitted in course of the year	51	28	79
Readmitted	2	2	4
Whole number	102	83	185
Discharged, including deaths	31	29	60
Remaining, Dec. 31, 1857	71	54	125
Of those discharged, there were cured	11	16	27
Died	19	10	29

Causes of death.—Chronic diarrhœa, 13; chronic gastritis, 2; general debility, 2; typhoid fever, 2; marasmus, 2; paralysis, 2; consumption, 1; disease of heart, 1; apoplexy, 1; hepatization of lungs, 1; ascites, 1; abscess of liver, 1.

"It will be seen," says Dr. Barkdull, "that the year just closed has been one of unusual prosperity. and especially in the sanitary condition of this institution; having had no disease during the past season assuming anything bordering on an epidemic form. This, in a great degree, is attributable to the important improvements made in the guttering and sewerage connected with the detached buildings, where usually the larger proportion of deaths occur, and where the more filthy class of patients are kept.

"Taking into consideration the unfavourable condition, mentally and physically, in which a large proportion of our patients are received, it is rather surprising than otherwise that so large a percentage should be discharged entirely restored in body and mind, after a stay varying from three to twelve months. * * * Fully one-half of the patients now in the institution are confirmed cases of dementia, the most of whom have been in this condition varying from three to ten years."

Dr. Barkdull urges the importance of extending the central building ninety or one hundred feet in the rear, in order to complete the original design, and to supply apartments, the want of which occasions much inconvenience.

Report for 1858.

	Men.	Women.	Total.
Patients in the asylum, Dec. 31, 1857	71	54	125
Admitted in the course of the year	56	28	84
Whole number	127	82	209
Discharged, including deaths	47	25	72
Remaining, Dec. 31, 1858	80	57	137
Of those discharged, there were cured	22	10	32
Died	17	10	27

Causes of death.—Chronic diarrhœa, 15; apoplexy, 2; dysentery, 2; general debility, 2; disease of the heart, 1; epilepsy, 1; phthisis, 1; paralysis, 1; suicide, 1; marasmus, 1.

The fatality "from chronic diarrhœa greatly predominated during the last past, as in all previous years; this being owing, in a great measure, to the prostrated condition of many at the time of admission, from the effects of protracted illness."

The patients assemble in the chapel, for religious worship, on Sunday evenings. Thirteen newspapers are received, gratuitously, from their proprietors. In the course of the year 2400 garments, and articles of bed furniture, were made by the patients, with the assistance of one hired seamstress.

	Men.	Women.	Total.
Patients admitted since the asylum was opened	456	298	754
Discharged, recovered	109	82	191
Died	203	134	337

The subject of marriages of consanguinity in their effects upon offspring is briefly discussed in this report, but nothing is adduced which would add to, or modify, the results obtained by Dr. Bemiss, as exhibited in his excellent article published in the last volume of the *Transactions of the American Medical Association.*

In reference to the injurious effects of deception in the removal of insane persons to an asylum, the following case is related: "She was told to arrange for an extensive northern tour, and, as might naturally be expected under the circumstances, heard of the proposed journey with pleasurable emotions. In due time they were gliding up the river, with nothing to mar the delightful anticipations of the prospective. But here she was informed of a friend some few miles in the interior, who must not be passed. A proposal was made, and consent obtained. But mark the sequel: the boat landed; a hack was ordered, and in a few hours they arrived at the door of the asylum. 'What does this mean,' (said she.) 'Where have you carried me? Why! look around at these crazy people; surely this is an insane asylum. Is it possible I have been so deceived, and decoyed here by the basest falsehood and treachery? Yes, it is so; and that by those whom I was led to regard as my truest and most reliable friends. Well, I will never submit to such an outrage; you can force me in, but you will have to keep me by the same means. Take me where you promised on leaving home, and I will be content, but not otherwise; no, never.' Such is almost a literal description of a scene witnessed during the past year; and, although months have since fled, still scarcely a day passes without hearing something respecting the wrongs inflicted by this 'dishonourable transaction.'"

15. An act authorizing the construction of a *State Lunatic Hospital* in Texas has passed the legislature and become a law. A farm at Austin, the capital of the State, has been purchased, and a portion of it "inclosed with a substantial cedar fence;" and some further preparations have been made for the erection of the buildings. Dr. J. C. Perry has been appointed as the superintendent of the institution, and has travelled through the middle and some of the northern States of the Union, visiting several of the best of the American establishments for the custody and treatment of the insane, and making himself familiar with the most recent improvements in the architectural arrangements of their edifices. His "first semi-annual report," which is now before us, was rendered on the 27th of November, 1857. Its contents, so far as the hospital is concerned, relate chiefly to preliminary preparations, and hence furnish but little matter of general importance. The ground-plan adopted for the building is similar to that of the New Jersey State Lunatic Hospital, and of the Government Hospital for the Insane—the irregular, or broken, linear plan. As a preventive of destruction by fire, "all connection between the different subdivisions of the building, except through the corridors, is to be cut off by thick walls, extending through and above the roof, and provision being made for closing the openings at the corridors by means of sliding iron doors. The stairs, also, are to be of iron, set into the walls. Thus the danger of loss of life by fire will be diminished, and its extension from one part of the edifice to any other rendered improbable."

That portion of the report which presents the statistics of the insane and idiots of Texas, although those statistics are far from perfect, will be more widely read with interest.

The national census of 1850 returned 212,592 inhabitants of Texas, and an aggregate number of 141 idiots and insane persons. "These tables, however, are universally acknowledged to be unreliable." Hence an attempt has been made to ascertain the number of these two classes, by circulars addressed "to all the county officers, and to many physicians"—the same method which was adopted and executed with signal success, in Massachusetts. Returns, though incomplete in some cases, have been received from seventy-nine counties, while forty-seven counties, and all the large towns remain to be heard from. Imperfect as are these returns, "the pictures of suffering and destitution presented are lamentable in the extreme. Could we have a full account, it would be startling."

The data thus gathered afford the subjoined general numbers.

1st. Idiots. White males, 46; white females, 32; coloured males, 10; coloured females, *none*. Total, 88.

2d. Insane. White males, 91; white females, 46; coloured males, 4; coloured females, 4. Total, 144.

Aggregate of the two classes, 232. "From analogies, and from data received, to estimate the insane in this State at 350, and the idiots at 150, and the increase of the two classes at 70, annually, would probably be underrating their numbers."

The government authorities of Texas have acted wisely in the appointment of a superintendent of the hospital at the moment of its practical inception. No other measure could so largely contribute to the perfection of the future establishment. No other men have so fully studied, and none other so entirely understand all the details of architectural construction, of fixtures, appliances, and furniture, necessary to a good building for the insane, as the superintendents of those institutions which are already in operation.

16. The following extract is taken from the fifth annual report of the trustees of the *State Insane Asylum of California*. "From the date of our appointment by the legislature, up to the month of July, a question regarding the legality of the appointment of the resident and visiting physicians was pending in the courts, upon the decision of which depended the validity of our appointment. That question having been decided by the Supreme Court, our predecessors, on the first day of August, yielded up their trust, and the present board entered upon the discharge of their duties."

From this it appears; first, that the California Asylum has been subjected to one of those controversies which, whatsoever may be the result, in respect to the parties concerned, are always more or less prolific of evil, and of evil alone, to the institution itself, during their pendency and progress; and, secondly, that in the medical direction of the asylum the old, and almost entirely obsolete organization which includes the two offices of Resident Physician and Visiting Physician, has been revived.

Among the unfortunate effects of this controversy, one, which is important in a historical and a professional point of view, is mentioned by Dr. W. D. Aylett, the present resident physician, at the commencement of his report. "I entered," says he, "upon the discharge of my official duties, upon the first day of August, 1857. *My report will be confined to the period that has intervened. For the prior portion of the year, the record left me by my predecessor is too meagre to constitute the basis of a report.*"

	Men.	Women.	Total.
Patients in the asylum, August 1, 1857 . .	132	30	162
Admitted in five months	70	16	86
Whole number	202	46	248
Discharged, including deaths	46	14	60
Remaining, Dec. 31, 1857.	156	32	188

By an inspection of the general registration table, it appears that the data for its formation were so essentially "meagre," that of the 162 patients at the asylum when Dr. Aylett entered upon the performance of his duties, even the dates of admission of no less that 75 are recorded "unknown." From the same table, we learn that from the 1st of August to the 31st of December, 16 patients were discharged cured, and that of the 17 deaths in the same time, the causes of 16 were as follows: marasmus, 4; acute mania, 3; consumption, 2; dysentery, 2; epilepsy, 1; paralysis, 1; apoplexy, 1; chronic diarrhœa, 1; diarrhœa, 1.

Nearly all of this report is devoted to an exposition of the imperfections of the asylum buildings; and money is asked for the construction of "mad-houses for male and female patients, dining-room for female patients, chapel, bathing-rooms, privies," and other improvements. It is to be hoped that if these "mad-houses" should be erected, they will be designated by some less offensive name. And while we trust that the asylum, in all its *materiel*, will soon be placed, as it is implied from the language of Dr. Aylett that it is not now, "upon a respectable footing," we also look forward to the future issue of annual reports fraught, as were Dr. Reid's, in the earliest years of the institution, with matter of the deepest interest to the physician and the psychologist. P. E.

Art. XVIII.—*Medico-Chirurgical Transactions.* Published by the Royal Medical and Chirurgical Society of London. Volume the forty-first. London, 1858. 8vo. pp. 468.

This volume of *Transactions* contains twenty-one original communications. Thirteen of these communications, or abstracts of them, were published in the numbers of this journal for last year, in the quarterly summaries of improvements and discoveries in the medical sciences.

I. The first paper is, *An account of a Case of Arterio-Venous Aneurism of the Temporal Vessels, which was treated by Ligature of both the Artery and the Vein.* By Charles H. Moore, Surgeon to the Middlesex Hospital.

A history of this particular case is given in the number of this journal for January, 1858. We learn, in addition, from this communication, that the man was at work as an agriculturist, and perfectly well in the month of November

following the operation. The general conclusions at which the author has arrived, in a survey of the results of the various combinations of treatment practised in arterio-venous aneurisms, are as follows:—

"When the artery is tied above and below the opening the disease is cured; unless, indeed, an anastomosing branch join the artery between the ligatures, in which case arterial blood still continues to pass into the vein, and the operation is unsuccessful.

"The entire obliteration of the vein at the seat of the opening suffices equally with the closure of the whole artery for the cure of the disease. M. Nélaton undertook the treatment of a case of arterio-venous aneurism at the bend of the elbow by direct compression upon the wounded vessels, aided by pressure upon the artery at the higher part of the arm. After several months of treatment he succeeded in curing the disease, and at a post-mortem examination of the patient, two years afterwards, the vein was found obliterated at the site of the aneurism, the artery was healed and pervious.

"The only remaining mode of successful treatment, but a mode which could hardly be recommended for varicose aneurisms of the limbs, is that of obliterating both the arterial and venous trunks on the cardiac side of the communication between them" (the mode practised in the present case).

These general conclusions in regard to the successful modes of treating arterio-venous aneurism are very vague and unsatisfactory. The treatment proper for a case in which there is an intermediary sac between the artery and the vein would not be suited to another in which the communication between the vessels is direct; it must vary, also, with the size and situation of the vessels. The treatment practised in this particular instance, on account of the danger of applying ligatures to the veins, should never be advised; and it is evident that it was practised in this instance unwittingly, the temporal vein being tied under the belief that it was the artery.

It is fortunately only in very exceptional cases of arterio-venous aneurism that it is necessary to have recourse to an operation. Aneurisms increase in size because the pressure of the blood they receive is greater than the resistance of their walls; when there is a communication with a vein, a part of the blood finds thus an easy issue, and consequently, the pressure and the tendency to increase in size are much less in arterio-venous than in ordinary aneurisms. In those rare cases in which they grow rapidly and burst, or threaten to do so, the best mode of treatment, undoubtedly, is to ligate the artery above and below the sac. The opening into the vein allows the blood contained in the sac to escape, and the danger of consecutive hemorrhage from inflammation of the sac, caused by the presence of clots, does not exist as in ordinary aneurism, or, at least, is much diminished. By this proceeding the disease will always be cured, unless, as Mr. Moore says, there be an anastomosing branch between the ligatures. There is, we believe, only one case on record where this existed, and this which occurred in the practice of Dr. Norris was published in this journal for January, 1843.

The treatment of arterio-venous aneurism by direct compression has been more often, and more successfully practised than one would suppose from the statements of Mr. Moore. Besides the case to which he refers, M. Nélaton alone has thus successfully treated three others, and, as we learn from Broca (*Des Anévrysmes, et de leur traitement*, p. 290, Paris, 1856, 8vo.), direct compression had already, at the time of Scarpa, afforded several well-determined cases of success, and in the hands of Monteggia and the two Brambilla it succeeded completely. Arterio-venous aneurisms are far more often seen at the bend of the elbow than in any other situation, and we have here all the conditions most favourable for the employment of direct compression, and for continuing it as long as may be desired. The artery is but of medium size, it is near an osseous surface upon which it is easy to compress it, and the aneurism is superficial and generally not large. In those parts of the body where direct compression cannot be used, in case it be absolutely necessary to interfere, the double ligature of the artery or injections of perchloride of iron thrown into the sac, would be preferable, certainly, to ligation of the artery and vein on the cardiac side, as practised by Mr. Moore.

II. *Case of Communication with the Stomach through the Abdominal Parietes produced by Ulceration from External Pressure, with Observations on the Cases of Gastro-Cutaneous Fistula already recorded.* By Charles Murchison, M.D., Edin., etc.

An abstract of this paper, the most important that has yet been written on the subject of gastro-cutaneous fistula, was given in this journal for July, 1858. Certainly very few persons, even among those best acquainted with the literature of the profession, were aware that so many as twenty-five cases had been recorded of this affection. Complete as the paper is, it is somewhat remarkable that no reference is made therein to those cases in which it has been sought by surgical interference to establish these fistulæ, for the purpose of thus introducing nourishment into the stomach when the natural passages are closed.

A note appended to the history of this case states that the patient was then in better health than she had been the year before, when her history was taken, and, moreover, that the dimensions of the opening in the abdominal parietes had slightly increased. It is to be hoped that a case so calculated to aid in the solution of several undecided questions in regard to the action of the secretions of the stomach upon the food may not be neglected, and thus benefit to science may accrue from the infatuated act of this foolish creature.

III. and IV. Therapeutic Communications, Nos. I. and II. *On the Influence of Liquor Potassa and other Caustic Alkaline Solutions upon the Therapeutic Properties of Henbane, Belladonna, and Stramonium.* By Alfred B. Garrod, M.D., &c.

These are the first of a series of results obtained during a course of clinical investigations on the action of drugs, which Dr. Garrod announces his intention of laying before the society from time to time. The subject is certainly one of high importance, and it is one, moreover, which he is peculiarly capable of investigating, being both professor of materia medica in University College, and physician to University College Hospital. Full abstracts of these first two communications were published in the numbers of this journal for April and October of the past year. To the first of these were appended the results of some experiments of Mr. John F. France, related in the *Lancet*, which were entirely at variance with those of Dr. Garrod. In a note at the beginning of his second communication, Dr. Garrod shows how Mr. France had fallen into error; in one of his experiments, for example, the amount of potash employed was not more than half sufficient to neutralize the natural acidity of the extract. The clinical observations and the experiments of Dr. Garrod prove, beyond a doubt, that the caustic fixed alkalies possess the peculiar power of destroying the active principles of henbane, stramonium, and belladonna, even when in dilute solution, and that such combinations are, therefore, both chemically and therapeutically incompatible, and should never be prescribed.

V. *A Contribution to the Science of Teratology.* By Henry R. Silvester, B.A., M.D., Lond. (Communicated by Dr. Silvester.)

This paper contains an account of a remarkable instance of congenital malformation of the two upper extremities. The external appearances of the malformed parts were as follows:—

"*The Right Arm.*—The shoulder and upper arm deviated but little from the regular form. The forearm appeared shorter than usual. This was occasioned by the situation of the hand, which was fixed in a prone position, and flexed to such an extent that the radial side of the index finger lay adjacent to the radial side of the forearm. The forearm itself was directed a little outward, so as to form an angle with the outer side of the upper arm. The hand presented four fingers, without the slightest indication of a thumb.

"The *left arm* was more deformed. The shoulder was flattened, and the limb tapered gently to the wrist, and hung down by the side of the chest, with the hand directed backwards and upwards, and fixed in such a position that the palm of the hand faced the back of the forearm. The upper arm seemed to be nearly absent, and the prominence of the elbow was felt close to the posterior fold of the axilla. The hand presented only two fingers, the ring and the little finger."

The descriptive anatomy of the malformed limbs is given very minutely; the account occupying twenty-three pages. In addition to this, three tables are added of the muscles, the arteries, and the nerves, as they were present, or absent, or found in an abnormal state. This paper will be an exceedingly useful one, therefore, for future reference, as cases of similar deformity are constantly presenting themselves. The author has purposely avoided entering upon the general subject of monstrosities, and has kept closely to the facts and inferences suggested by the particular instance before him. Among his conclusions we notice the following as bearing most upon the disputed points in teratology:—

The absence of the usual bony attachment, or the want of a firm point of insertion, exerts a material influence upon the development of a muscle.

The absence or defective state of an organ reacts unfavourably upon the formation of the nerves and vessels which supply it, even at a distance.

Another point worthy of notice is that the deformity in the right arm does not conform to the rule laid down by Rokitansky, that when the radius is wanting, the thumb and forefinger, with so much of the carpus as belongs to them, are wanting too.

According to the classification of Saint Hilaire, the one generally adopted, this monster belongs to the family of *Ectromelians* (to make abort—a limb); a family which he declares to be the most difficult of all to classify and to divide into well-defined genera. This monster should probably be placed in the genus *Hemimele*.

This communication is accompanied by two wood-cuts, containing numerous figures, illustrating very fully the descriptions given in the text.

VI. *On some points in the Pathology and Morbid Anatomy of Glaucoma.* By J. W. HULKE.

A full abstract of this paper, and also of the remarks its reading called forth from Messrs. Bowman, Critchett, and Haynes Walton, was published in the April number of this journal for the past year. The symptoms of glaucoma have been generally attributed, of late years, to an effusion between the choroid and the retina, the result of acute or chronic choroiditis. It would seem, however, that no morbid changes are found in the choroid except fulness of its vessels, and that the hemorrhage comes from the capillaries in the inner layers of the retina.

The hemorrhagic spots in the retina and the irregular dilatations of the retinal capillaries are represented by two wood-cuts.

VII. *On the Analysis and Immediate Principles of Human Excrements in the Diseased State.* By W. MARCET, M.D., F.R.S., &c.

In the examination of human excrements, Dr. Marcet divides them mechanically into their immediate principles instead of chemically decomposing them. Some of the results he has thus obtained from fecal evacuations in a healthy state were given in a paper communicated by him to the Royal Society, published in this journal for January, 1858. We see from this present communication that he has simplified and added to his former mode of analysis, and the one he now offers to the profession he declares to be calculated to yield results at least as important as those already derived from the analysis of urine.

After having observed their physical characters, such as colour, consistency, odour, and reaction, the evacuations are microscopically examined, and then, if fluid or semifluid, they are concentrated in a water bath until reduced to the degree of solidity of healthy feces; the successive stages of the analysis of the resulting mass will be readily understood by a glance at the following synoptic table:—

- Excrements exhausted with boiling alcohol, and strained through a double fold of fine muslin
  - An insoluble residue left on the cloth.
  - A solution yielding on cooling
    - A deposit which, exhausted with alcohol, yields
      - An insoluble residue — This residue is to be dissolved in potash, and the solution decomposed with hydrochloric acid. Examine the solution for the detection of phosphoric acid, lime, and magnesia, and the precipitate for the detection of fatty acids.
      - A solution
        - A crystalline deposit on standing (*fatty acids and soaps*).
        - A residue, when evaporated to dryness, which, treated with ether, yields
          - An ethereal solution (*fatty acids*).
          - A residue insoluble in ether (*soaps*).
    - A solution which is mixed with milk of lime. The lime precipitate, treated with ether, yields
      - An ethereal solution (*excretine, colouring matter*).
      - An insoluble residue which, decomposed with hydrochloric acid, yields
        - A solution of chloride of calcium.
        - A solid substance, soluble in ether (*fatty acids*).
      - A solution. It is to be evaporated to dryness, decomposed with sulphuric acid, exhausted with a mixture of alcohol and ether, and this solution tested for *organic acids*.

Dr. Marcet gives the history of three different pathological cases to show the results obtained by this method of examining the feces. In the first the excrement yielded a large amount of free fatty acid, which does not exist in healthy human feces unless a very large amount of vegetable food has been taken. The post-mortem examination was made in this case, and it showed the state of the liver and the pancreas to have been such that both bile and pancreatic juice must have been deficient in the intestines. In the two other cases there was an evident deficiency of bile in the stools, and in these cases also they contained a considerable proportion of free fatty acids. In a note. it is stated in addition, that, since writing this paper, the author has examined the motions passed in another case of jaundice and found them to contain a large proportion of fatty acid.

In connection with this subject of the action of the different secretions poured into the intestinal canal, in the matter of fatty stools, we find that in the elaborate memoir of Dr. Da Costa. on the *Morbid Anatomy and Symptoms of Cancer of the Pancreas*, recently published in the proceedings of the Pathological Society of Philadelphia, it is stated that pathological anatomy seems to contradict the assertion that the pancreatic secretion possesses alone the power to emulsify, and to render the fatty matters fit for absorption; that it can certainly not be the only agent; when fat is not acted upon, the duodenal secretions must also be vitiated, and the flow of healthy bile interfered with.

The last number of Brown-Séquard's *Journal of Physiology* (for October, 1858), contains the translation of a recent paper by Dr. Marcet on the part performed by the stomach and by the bile in the digestion of fats. In it the author declares that in five cases in which the bile could not flow into the intestine, he found the fecal matters to contain free fatty acid. As the phosphate of soda is one of the constituents of bile he first made some experiments with it, and found it to emulsify perfectly fatty acids; with the neutral fats this did not occur. With bile itself the same phenomena took place. As the fats in food are neutral, it might be concluded, *à priori*, that the bile cannot serve in their digestion, but other experiments are given which show that in the stomach the fatty matters in the food are, in the stomach, changed into fatty acids.

In a note added to the paper of Dr. Marcet, Brown-Séquard records the following experiment to show that the absorption of fat can take place without any influence having been exerted upon it by the pancreatic juice, the bile. or the intestinal secretions (those of the small intestines): After having tied the large intestine immediately above the ileo-cæcal valve, in a cat, the large intestine was emptied by injections. and then 100 grammes of fresh lard at the temperature of 104° were thrown in and the rectum tied; five hours afterwards the animal was killed, and only 86 grammes of a fatty liquid were found in the large intestine.

VIII. *On the Membrana Decidua which surrounds the Ovum in Cases of Tubal Gestation.* By Robert Lee, M. D., F. R. S., &c.

A full abstract of this paper is given in the April number of this journal for the past year.

IX. *Supplement to a Paper on the Membrana Decidua which surrounds the Ovum in cases of Tubal Gestation.* By ROBERT LEE, M. D., F. R. S.

This paper contains the history of another case of extra-uterine gestation, and of the post-mortem examination, communicated to Mr. Lee by Mr. Favell, with the minute dissection of the preparation consisting of the right half of the uterus, right Fallopian tube, and ovary, made by Mr. Lee himself. He found no difficulty in satisfying himself in this instance as in the others recorded in the preceding paper, that the placenta and villi of the chorion were everywhere completely invested with a deciduous membrane. From the remarks of Mr. John Clarke, appended to the abstract of the paper given in the journal, it appears that he is not inclined to adopt the opinion of Mr. Lee, that in Fallopian tube gestation a deciduous membrane is always formed round the ovum; he could find no appearance, in the preparation presented, of a strictly speaking deciduous membrane; there was, according to him, nothing but the fœtus, the amnion, and the chorion, lying against the inner coat of the tube.

Mr. Lee's paper is, it must be said, altogether unsatisfactory so far as the proof of the existence of a membrana decidua in tubal gestation is concerned. He finds enveloping the fœtus, under these circumstances, one membrane he calls the amnion, another he calls the chorion, and over this another which he chooses to call membrana decidua, but whose anatomical composition he does not describe. What is called membrana decidua in the uterus is well known at the present day to be merely a modification of the mucous membrane lining the uterus, which is very different from that lining the Fallopian tubes, the one being very thick and filled with follicles, while that of the tubes has no follicles and is very thin. It seems hardly probable that the mucous membrane of the tubes could undergo the very peculiar changes undergone by the mucous membrane of the uterus, a very different structure, and the membrana decidua outside of the uterus must be a very different thing from one inside. To call, therefore, *membrana decidua*, a membrane made out by the scalpel to cover the chorion, is not to convey any definite idea of what the membrane really is, even allowing it to be capable of demonstration, which Mr. Clarke positively denies.

X. *On the Action of Galvanism upon the Contractile Structure of the Gravid Uterus, and its Remedial Powers in Obstetric Practice.* By F. W. MACKENZIE, M. D., Lond., &c.

An abstract of this very interesting paper is contained in the number of this journal for July, 1858. The mode in which the current is made to pass is not, however, stated therein with sufficient exactness; the positive pole should be applied to the nape of the neck, and the negative, by means of a vaginal conductor, to the cervix uteri.

XI. *A Case of Complete Inversion of the Uterus of nearly Twelve Years' Duration successfully treated.* By W. TYLER SMITH, M. D.

An abstract of this paper, with the discussion that took place when it was read before the society, is given in this journal for July, 1858. We learn from a postscript to the paper that the patient has since been delivered of a living child; some amount of flooding occurred after labour, but no tendency to inversion was manifested.

XII. *On Excision of the Knee.* By GEORGE MURRAY HUMPHRY.

An abstract of this paper was published in this journal for July, 1858, together with the remarks its reading called forth, in the society, from some of the most eminent surgeons of England. It is very satisfactory to find that the opinions of the author were, by them, very generally condemned, and it is to be desired that this condemnation may become universal.

XIII. *Contributions to the Etiology of Continued Fever: or an Investigation of Various Causes which Influence the Prevalence and Mortality of its Different Forms.* By CHARLES MURCHISON, M. D., Edin., &c.

This paper is much the longest of any in the volume, occupying eighty-eight pages. The conclusions to which the author has arrived as the result of his extensive and well-directed investigations are given in the July number of this journal for 1858. Another conclusion, which he has since been led to adopt

from the further study of the conditions under which epidemics of relapsing fever have appeared, is that this fever is the result of famine alone, and that the poison of typhus is generated by destitution and overcrowding combined.

This essay is an exceedingly valuable contribution to the subject of hygiene, and also to medical pathology. In it are investigated not only the causes which influence the prevalence and mortality of continued fever regarded as a single disease, but also, in showing that different causes produce different forms of fever, much light is thrown upon the specific identity or non-identity of these different forms.

XIV. *Case of Hydatids of the Tibia.* By William Coulson.

A short abstract of this case will be interesting, from the extreme rarity of the affection to which it refers.

The patient, a married woman, 25 years of age, had received eight years before on the front of the right tibia, a little below the insertion of the ligamentum patellæ, a kick, which was soon followed by a swelling that gradually and steadily increased. At the expiration of four years the pain became very severe, and some blisters were applied, after which the pain was less. Ten weeks before presenting herself to Mr. Coulson the swelling gave way spontaneously, and matter containing acephalocysts was discharged. When he first saw the patient the swelling, situated just below the tuberosity of the right tibia, was as large as an orange; in its centre was a small ulcer, and the surrounding integuments were red and swollen. The discharge, which was not considerable, was found to contain some acephalocysts, and thus the nature of the affection was revealed.

The operation performed for the relief of this case was opening the cavity and destruction of its lining membrane with solid nitrate of silver; a few weeks afterwards a small piece of necrosed bone was removed from the upper part of the floor of the cavity, and it then gradually filled up. In the examination made of the cyst and of its contents, it is stated that no trace of echinococci could be found.

This affection, hydatid tumour in the osseous system, is one, as said before, of extreme rarity; in fact, with the exception of the one whose history has just been given, we believe that but fifteen cases have ever been recorded. In these, the tibia was affected six times; the frontal bone, three; the humerus, twice; the pelvic bones, twice; the femur, once, and the vertebral column, once.

XV. *A Case of Fibrous Polypus of the Urinary Bladder, with Observations, and a Table of the Recorded Cases.* By John Birkett.

This case of *fibrous polypus*, as it is called by Mr. Birkett, occurred in a young girl, five years of age, whose condition was most cachectic and miserable. The new growth which was soft, but strong enough to resist ordinary manipulation, projected through the meatus urinarius, and, the index finger being passed into the bladder, was found to be attached to the superior region of the neck of the bladder. The child was unable to pass urine voluntarily, and what was removed by the catheter was turbid, dark-coloured, ammoniacal, and deposited a muco-purulent precipitate. A portion of the tumour was removed by ligature; a few days afterwards considerable pyrexia supervened, and the child died. At the autopsy a number of new growths were found in the bladder, having more or less of the polypoid form; that is, their points of attachment were much narrower than their free extremities, although, with the exception of one or two, they could scarcely be called pedunculated. They had their seat in the mucous membrane and submucous connective tissue, the former extending over their surfaces. When microscopically examined, these growths showed none of the fibrous vascular characters of uterine polypi; they were readily broken up into amorphous pieces, which consisted of cells and nuclei, having a glistening appearance, but at their edges the matrix could be seen, which was composed of a network of most delicate fibres, resembling somewhat elastic tissue.

The observations appended to the history of this case are chiefly in regard to the differential diagnosis of polypus of the bladder. The disease is said to be distinguished from other intra-vesical growths, in the dysuria preceding the bleeding, while in the latter blood mixed with the urine is generally the first indication which attracts the notice of the patient. After having ascertained,

then, that the dysuria is independent of prostatic or urethral disease, the distinguishing feature of the affection is what Mr. Birkett, correctly perhaps, though the expression sounds oddly, calls the *anæmic state* of the urine.

In the table of recorded cases but ten have been collected by Mr. Birkett. He would have found others in the monograph of Nicod *On Polypi of the Urethra and Bladder* (Paris, 1835); and since then M. Hélic has published a typical case, occurring in a man sixty-three years of age (*Bulletins de la Soc. Anat.*, 1838); and M. Mercier has also given another in his *Recherches Anatomiques* (1841).

It is rather remarkable that the case should be styled one of *fibrous* polypus, judging from the account given of its microscopical examination.

This communication is accompanied by a plate representing the interior of the bladder.

XVI. *Researches on Gout.* Part I. *The Urine in the Different Forms of Gout.* Part II. *The Influence of Colchicum upon the Urine.* By ALFRED B. GARROD, M. D., &c.

An abstract of this interesting communication was published in this journal for October, 1858. On account of the interest attached to the subject, we will give the conclusions at which he has arrived as to the influence of colchicum upon the urine, in full. They are as follows:—

"First. That there is no evidence that colchicum produces any of its effects upon the system by causing the kidneys to eliminate more uric acid; in fact, I believe that when continued for any length of time, the contrary rather holds good.

"Secondly. That from the observations in the present communication we cannot assert that colchicum has any influence upon the excretion of the urea or other solids of the urine.

"Thirdly. That colchicum is by no means a diuretic in all cases, but, on the contrary, it often diminishes the quantity of urine, especially when it produces a marked effect upon the secretions of the alimentary canal."

Dr. Hammond, in his experiments on the action of certain vegetable diuretics (in this journal for January, p. 277), found that colchicum was the only one in which there was an increase in the amount of solid matter eliminated. We repeat with him, therefore, "that it is desirable that we should have further observations with this article."

XVII. *Contributions to the Pathology of the Glandular Structures of the Stomach.* By WILSON FOX, M. D., of Newcastle-under-Lyme. Communicated by Dr. Garrod.

This paper of Dr. Fox is drawn up from the notes of observations made upon 100 stomachs, taken indiscriminately from the bodies of patients brought for post-mortem examination to the Pathological Institute attached to the Charity Hospital, in Berlin. It is valuable, rather as a contribution to the pathological anatomy of the glandular structures of the stomach than to their pathology, for there is seldom any connection made between the post-mortem appearances therein recorded and the symptoms exhibited by the patient during life.

This communication is accompanied by two plates containing a number of engravings.

XVIII. *On the Influence of the Cervical Portions of the Sympathetic Nerve and Spinal Cord upon the Eye and its Appendages, illustrated by Clinical Cases, with Observations.* By JOHN W. OGLE, M. D., &c.

An abstract of this paper, one of the longest, and, at the same time, most interesting, both physiologically and pathologically, in the whole volume, is published in this journal for October, 1858.

XIX. *An Account of a Case of Calculus in the Bladder removed by Lithotrity, in which a communication existed between the Bladder and Intestine.* By CHARLES HAWKINS, F. R. C. S., &c.

This case is a very remarkable one; a gentleman, 55 years of age, who had never experienced inconvenience of any kind about the pelvic organs, suddenly commenced to pass fecal matter with his urine; at the end of a year symptoms

of stone showed themselves, from which he suffered greatly for about eighteen months, when he was relieved by lithotrity, which was practised several times. The calculus was composed entirely of triple phosphates, having as a nucleus a small portion of vegetable matter. The patient continued to pass feces at times in his urine, but at the time of the writing of the communication was quite well, and free from pain; his water, generally, was quite clear and never contained any blood.

XX. *A Case of Dislocation of the Humerus Upwards and Inwards, with Fracture of the Coracoid Process of the Scapula, accompanied by a Dissection of the Parts Involved in the Injury.* By T. HOLMES.

The extraordinary dislocation of the humerus, described in this case, was the result of a fall from a great height, the patient, a man fifty years of age, striking the head, the left side of the chest, and the left elbow. The injury at the shoulder-joint was diagnosed immediately, and on the death of the patient from purulent infection, about a fortnight afterwards, the diagnosis was confirmed by dissection. The head of the humerus was found immediately under the skin, having passed through the fibres of the deltoid, and having the cephalic vein on its inner side. In its passage upwards it had fractured the coracoid process, and was resting behind on the stump of this process, and on the clavicle, with a small portion of the coraco-acromial ligaments, which remained untorn. The glenoid cavity was *below* and a little external to it, its tip lay on a horizontal plane quite below the level of the dislocated head of the bone. The long tendon of the biceps remained still attached to the scapula; in leaving the glenoid cavity, the humerus had slightly injured it, so that some of its internal fibres had been torn away from the muscle. The coracoid process had been fractured near its base. The muscles attached to the greater tuberosity of the humerus were torn through, except that a portion of the teres minor remained.

This is the only case recorded of this peculiar form of dislocation, in which the dissection of the parts after death is given.

XXI. *A Case of Premature Puberty.* By ROBERT BATH SMART, M. R. C. S.

This communication contains a very full account of premature puberty, occurring in the person of Mary Deane, of Manchester, in whom the catamenia made their first appearance when the child was three years and six months old.

W. F. A.

ART. XIX.—*On the Nature, Causes, Statistics, and Treatment of Erysipelas.* By PETER HINCKES BIRD, Fellow by Examination, and Licentiate in Midwifery, of the Royal College of Surgeons, etc., Fellow of the Royal Medico-Chirurgical Society, Author of the Jacksonian Prize Essay for 1849: On Erysipelas, etc. etc. "*Ars medica est tota in observationibus.*" 8vo. pp. 60. London, 1858.

THERE are few diseases the true pathological character of which has been more completely overlooked than has been that of erysipelas. Attention being solely directed to the diffuse inflammation of the skin by which it is ordinarily attended, this has been fixed upon as its invariable pathognomonic sign —one of its more common manifestations being thus mistaken for the entire disease. The close relationship which was found to exist between erysipelas and affections that, at one period, were supposed to be the most widely removed from it, gave rise to a renewed and more accurate investigation into the true character of the disease, the result of which has been to show that the characteristics of the same diffuse inflammation to which the distinctive term erysipelas has been applied, may be manifested in other tissues than the skin and subcutaneous cellular membrane.

With Dr. Bird, we must then view erysipelas as "a mode of inflammatory

action requiring a particular constitutional state for its development, and called into operation by various and opposite causes." Either by cold, by errors of diet, by injuries, or by contact with an individual labouring under the disease, by infection, and, perhaps, by other less obvious excitants.

The term erysipelas should be restricted to the diffuse inflammation of the skin and subcutaneous cellular tissue; which, however, is not to be classed as a distinct disease, but merely as an example, in the words of Dr. Bird, on the skin, of the same form of disease which may occur in other tissues—constituting diffuse inflammation of the mucous or serous membrane, diffuse phlebitis, puerperal fever, etc.—"all of which have a common origin, a poison in the blood, are infectious and contagious, and may mutually produce each other."

As alliances of erysipelas Dr. Bird includes those instances of diffuse inflammation of the various structures of the body originating in, or in connection with, this disease. These alliances he groups together as follows:—

"1. *Diffuse inflammation of the cellular tissue.*—There is much evidence in favour of the opinion of the close affinity between erysipelas and diffuse inflammation of the cellular tissue. The general and many of the local symptoms of diffuse inflammation of the cellular tissue closely resemble those of erysipelas. The commencement of the disease is marked by the same general derangement, and the constitutional symptoms are of the same character—the changes locally produced by erysipelas in its cellulo-cutaneous form and diffuse cellular inflammation are wonderfully alike: the predisposing causes are the same, the results identical if resolution does not take place. Diffuse cellular inflammation occurs, in connection with puerperal fever, a disease which, as will be afterwards shown, is closely allied to erysipelas. Diffuse cellular inflammation and erysipelas prevail epidemically at the same time. One form of the disease is extremely liable to produce the other in a second person; and the two forms of disease are mutually capable of exciting each other.

"Many circumstances connected with the coincident appearances and causes, the circumstances under which it is most rife, its mode of propagation, its accompanying local and constitutional phenomena, the prevalence of the two diseases at the same time, induce a strong suspicion of a close alliance between hospital gangrene, malignant pustule, and erysipelas.

"2. Numerous writers refer to the close affinity between erysipelas and *diffuse inflammation of the mucous membrane.* There is strong evidence in favour of the opinion that emanations from those affected with erysipelas will produce diffuse inflammation of those membranes; and I have met with several cases in which a direct extension of the diffuse inflammation had manifested itself from the fauces to the external skin by the anterior nares and lachrymal passages, and *vice versâ;* and the extension of the diffuse inflammation down the throat, has been observed to appear around the wound of tracheotomy in the form of erysipelas.

"A diffuse inflammatory state of the fauces has been mentioned as a precursor of erysipelas, and this is so frequently the case that it was observed in nearly sixty per cent. of the cases of idiopathic erysipelas of the face, of which I have taken notes; it was sometimes observed in idiopathic, and occasionally, but much more rarely, in traumatic erysipelas of the extremities. * * * Some interesting cases have been witnessed of erysipelas spreading down the throat, and also of extending up the vagina and rectum. * * *

"Diffuse inflammation of the mucous membrane is not unfrequent in those attending on cases of puerperal fever; the value of this fact will be appreciated when the alliance between erysipelas and puerperal fever is determined.

"There are occasionally observed in the surgical wards of hospitals, other cases which seem to point out clearly the alliances of erysipelas; thus supposing there are several cases of erysipelas of the head, face, or extremities; patients who have taken neither mercury nor iodine, become subject to acute stomatitis, others have swelling and tenderness of the tongue, accompanied with diffuse inflammation of the fauces, and considerable constitutional disturbance.

"From the occurrence of these cases of cynanche with ordinary erysipelas, from the fact that we can often trace the continuity of inflammation from the

fauces to the face, through one or several of the passages by which the mucous membrane is continuous with the skin, and *vice versâ;* from the connection of these with occasional glossitis and stomatitis; from the condition of the mucous membrane accompanying these affections, and from the general testimony in favour of its contagiousness, we can but conclude that these affections are instances of these structures being attacked by diffuse inflammation, which when limited to the skin is properly termed erysipelas.

"*Diffuse inflammations of serous membranes.*—Various writers have included these affections under the term 'erysipelas,' and the evidence to be produced will serve to prove the strong alliance existing between them.

"A. *Diffuse arachnitis.*—It is difficult to say how far diffuse arachnitis is allied to erysipelas; but it is pretty certain that in many cases of erysipelas of the head this alliance can be traced. Alibert evidently inclines to the opinion that the membranes of the brain may be affected by diffuse inflammation in connection with erysipelas. Nunneley believes that the frequent purulent deposits in various viscera will never or rarely be found to follow accidents to the head, unless preceded by diffuse arachnitis; but in patients who have died from erysipelas of the head I have by no means found this condition of frequent occurrence.

"B. *Diffuse inflammation of the peritoneum, pleuræ, pericardium,* &c., has been frequently noticed supervening upon erysipelas.

"C. *Puerperal fever.*—Writers even from an early period suggested, and the limited testimony of later authors confirm, the connection which exists between erysipelas and puerperal fever. * * *

"The following is striking evidence in favour of this opinion. The local symptoms during life and the appearances after death are identical, allowance being made for the different situation and texture of the parts attacked; both puerperal fever and erysipelas arise under the same circumstances, in crowded and close wards; both diseases are marked by great disposition to the formation of unhealthy pus; the same danger attends inoculation with the fluids effused in puerperal fever, and the immediate development of erysipelas or malignant pustule in the part inoculated; both erysipelas and puerperal fever may exist in the same patient; they prevail at the same time, and may during life mutually produce each other in a second person.

"D. *Diffuse inflammation of veins, arteries, and lymphatics. Diffuse phlebitis.*—So similar are the constitutional and even local symptoms of diffuse phlebitis and erysipelas, that even the best observers have made errors in diagnosis. In both these diseases there is the same disposition to the deposition of pus in different organs, and for inflammation and imperfect suppuration to be set up in distant parts of the body; there is the same tendency for the serous membranes to become affected; both diseases depend upon constitutional causes, more than upon the immediate exciting cause; one form of complaint is very liable to produce the other; and it has been observed that the same condition of atmosphere conduces to erysipelas and diffuse phlebitis. Abundant evidence has already been brought forward to substantiate the opinion, that puerperal fever prevails most when erysipelas and other diffuse inflammations are rife—produces them, and is produced by them; and as one form of puerperal fever consists in diffuse inflammation of the uterine veins, much of the evidence in proof of the close alliance between erysipelas and puerperal fever is applicable here.

"It is probable that like other serous membranes the internal structure of arteries may be subject to diffuse inflammation, in connection with erysipelas, but I have not met with any instances. Guthrie speaks of erysipelatous inflammation of arteries, and gives three instances.

"As the lymphatics, owing to their general and dense distribution within as well as between all the organs of the body, necessarily take part in every inflammation, they are no exception to the general rule. The two diseases are occasionally observed to be complicated to a remarkable extent; many patients affected with angeioleucitis being soon after attacked with cutaneous or cellulo-cutaneous erysipelas, and *vice versâ*, those who were first attacked with erysipelas soon presenting it complicated with angeioleucitis."

The rest of the work before us is devoted to the statistics and treatment of erysipelas, or diffuse inflammation of the surface.

Dr. Bird divides the disease into two species: 1. *Uncomplicated Erysipelas;* having three varieties: α. of the face and head; β. of the trunk; γ. of the extremities. 2. *Complicated Erysipelas;* having two varieties: α. with diffuse inflammation of the subcutaneous cellular and adipose tissues; β. with inflammation of fascia, intermuscular cellular tissue, and joints.

Under the head of "Statistics," Dr. B. presents the following analysis of 260 cases of erysipelas:—

	Men.	Women.	Total.
Idiopathic of head, face, etc. . . .	34	51	85
Traumatic of ditto	27	13	40
Idiopathic of extremities	27	22	49
Traumatic of ditto	59	27	86
			260

	Rigors and constitutional symptoms were observed in—	Constitutional symptoms without rigors in—	Precursory sore throat in—	No precursory symptoms in—
Idiopathic of face	Men 23, or 67.6 per ct.	6, or 17.6 per ct.	14, or 41.2 per ct.	4, or 11.8 per ct.
	Women 38, or 74.5 "	7, or 13.7 "	31, or 60.7 "	3, or 5.8 "
Traumatic of face	Men 8, or 29.6 "	10, or 37.0 "	2, or 7.4 "	9, or 33.3 "
	Women 6, or 46.2 "	5, or 38.5 "	1, or 7.6 "	2, or 15.4 "
Idiopathic of extremities	Men 12, or 44.4 "	10, or 37.0 "	3, or 11.1 "	2, or 7.4 "
	Women 13, or 59.1 "	4, or 18.2 "	3, or 13.6 "	1, or 4.5 "
Traumatic of extremities	Men 25, or 42.4 "	15, or 25 4 "	2, or 3.4 "	17, or 28.8 "
	Women 11, or 40.7 "	10, or 37.0 "	....	6, or 22.2 "

In 81 cases of idiopathic erysipelas of the face, the different parts of the face were attacked in the following order of frequency:—

Right side of face.	In women	29	times, or	56.9 p. c.	Men	17	times, or	50.0 p. c.
Left side of face.	"	10	"	19.6 "	"	10	"	29.4 "
Middle line of face.	"	7	"	13.7 "	"	4	"	11.8 "
Both sides at same time.	"	3	"	5.9 "	"	1	"	2.9 "

In these 260 cases, 20 deaths occurred, or 7.5 per cent. Of these, *one* case was complicated with severe burn; *one* with dropsy, after scarlet fever; *one* with advanced phlebitis; *one* with a severe scalp wound; *two* were dying when seized; *another* was dying from extreme neglect before admission.

The 260 cases occurred in the different seasons as follows: *Spring*, 66; *Summer*, 49; *Autumn*, 56; *Winter*, 89. That erysipelas is more frequent during winter and spring, in London, is shown by the following table, derived from the Registrar-General's returns.

	1845.	1846.	1847.	1848.	1849.	1850.	1851.	1852.	1853.	1854.	Total
Spring	95	71	116	196	137	119	81	120	86	96	1117
Summer . . .	80	78	107	129	114	103	74	98	74	115	972
Autumn . . .	56	92	126	128	99	65	76	54	80	109	875
Winter	77	106	176	126	109	87	116	67	84	128	1076

In 41 cases of erysipelas, no eruptive fever was present in 5 cases; its presence was uncertain in 2 cases. It did not exceed 12 hours' duration in 15 cases; 24 hours in 9 cases; 48 hours in 6 cases; 72 hours in 1 case. In 3 cases only was a precursory fever unquestionably observed; in one of which it lasted 4 days, in the other two 1 day.

In 173 cases collected from hospital practice, in 66 no mention is made of precursory fever; in 21 it was remarked as uncertain. In 34 it did not exceed

12 hours' duration; in 26, not 24 hours; in 20, not 48 hours; in 5, not 72 hours; and in *one*, it lasted 7 days.

In 82 cases, the time of day at which the symptoms first appeared was: during the day in 37—viz., 19 men and 18 women; after night in 45 cases—viz., 15 men and 30 women.

The temperature of the inflamed skin, in the case of a man with erysipelas of left hand, was 94°. In the case of a young woman with erysipelas of face, the temperature of recently inflamed skin, on first day, was 97.7°, while that of the cavity of mouth was 99.5°, and of the healthy part of face 95.3°. On the third, the temperature of the first was 95.9°, of the second 97.7°, of the third 93.2°. On the fourth day, the first was 95.9°, the second 98.6°. While the temperature of old erysipelas was, on the third day, 93.2°, and on the fourth day, 92.5°.

In *ambulant* erysipelas there was not observed any rule as to the direction in which it spread in 32 cases; it ascended in 7, descended in 6, spread laterally in 3, ascended and descended in 7, and spread in all directions in 9.

In 18 cases in which ambulant erysipelas acquired a *symmetrical outline*, this was accomplished on the first day of the disease in 4; on the second, in 2; on the third, in 2; on the fourth, in 2; on the fifth, in 1; on the sixth, in 5; on the seventh, in 1; and on the fourteenth, in 1.

With regard to the side of the body most frequently attacked, it was the median line in 45 cases—30 men, 15 females; on the right side in 82 cases—36 men, 46 women; and on the left side in 96 cases—47 men, 49 women.

With respect to the portion of the body on which it most frequently appears: in 29 idiopathic cases, it appeared on the face in 22—13 men, 9 women; in the upper extremity in 4—1 man, 3 women; in the lower extremity in 3—2 men and 1 woman. In 201 cases of traumatic erysipelas, in appeared on the head in 67, on the trunk in 44, on the upper extremity in 42, on the lower extremity in 50; namely, on the face in 35 cases—23 men, 12 women; at the aural region in 10 cases—4 men, 6 women; on the scalp in 22 cases—14 men, 8 women; on the neck in 6 cases—3 men, 3 females; on the breast in 25 cases—all women; on the remainder of chest in 3 cases—1 man, 2 women; on abdomen, 2—a man and a woman; on the back, 2 cases—a man and a woman; on the nates, 5 cases—1 man, 4 women; on the genitals, 1 case—a female; at the axilla, 5 cases—1 man, 4 women; on the arm, 8 cases—6 men, 2 women; at the elbow, 4 cases—1 man, 3 women; on the forearm, 5 cases—2 men, 3 women; on hand, 18 cases—9 men, 9 women; on fingers, 2 cases—both females; at the groin, 16 cases—13 men, 3 women; on thigh, 4 cases—2 men, 2 women; on knee, 8 cases—4 men, 4 women; on leg, 15 cases—11 men, 4 women; on the foot, 6 cases—3 men, 3 women; on the toes, 1 case—a woman.

In 124 cases—59 men, 65 women—the erysipelas was confined to a single region; in 84 cases—48 men, 36 women—it occupied two regions; in 21 cases—8 men, 13 women—it occupied three regions; and in 3 cases—1 man, 2 women—it occupied four regions.

In 67 cases of erysipelas of the face, it was confined to that part in 15 cases, spread to scalp in 17, to the trunk in 30, to trunk and upper extremity in 4, to trunk and both extremities in 1.

In 22 cases in which it commenced in the scalp, it spread to the face in 6, to the face and trunk in 14, and to the face, trunk, and upper extremities in 2.

In 25 cases in which it commenced in the breast, it spread in 17, viz: to chest and neck in 7, to back and abdomen in 2, to the head in 4, to the upper extremity in 1, to the head and upper extremity in 1, and to head and both extremities in 2.

In 46 cases in which it commenced in the arm, it spread in 23 cases, viz: to the back in 15, from the back to the head in 3, from the back to other arm in 2, from back to other arm and head in 2, to the other extremities in 1.

In 50 cases in which it commenced in the lower extremity, it spread in 18 cases, viz: to the trunk in 13, by the trunk to the other extremity in 4, and by the trunk to other extremity and head in 1.

The following table gives the mean and daily frequency of pulse, the influence of sex and age, and the number of observations:—

Day of disease.	Frequency of pulse.	Number of observations.	Maximum frequency.	Minimum frequency.	In men.	Number of observations.	In women.	Number of observations.	Over 30 years.	Number of observations.	Under 30 years.	Number of observations.
1	117	83	176	70	110	37	122	46	107	29	122	54
2	108	83	140	75	103	39	113	44	104	29	110	54
3	104	69	140	68	100	28	107	41	99	24	107	45
4	104	76	144	64	98	32	109	44	98	29	108	47
5	103	58	195	60	94	29	111	29	94	23	108	35
6	103	51	155	52	96	22	109	29	95	17	107	34
7	101	48	180	50	97	24	105	24	...	...	...	...
8	100	43	132	68	92	22	108	21	...	...	...	...
9	95	33	132	68	87	16	102	17	...	...	...	...
10	98	25	140	68	85	8	104	17	...	...	...	...
11	93	24	132	60	81	10	102	14	...	...	...	...

It not unfrequently happened that the pulse, after having fallen for some days, is again increased. This second acceleration occurred in women and the young on the fourth and fifth days; in men and the aged on the sixth and seventh days. Of 66 cases in which this increase was, on attentive examination, observed on one or other of these days, in 18 no cause was detected to which the increased frequency of pulse could be attributed. In 17 of the remaining cases, on the day on which the increased frequency of pulse was observed, the disease assumed a fatal tendency; in 6, typhoid symptoms appeared; in 3, inflammation of thoracic or abdominal organs; in 2, it was complicated with traumatic delirium; in 2, with hectic fever; in 6, it coincided with a fresh eruption of erysipelas; in 5, with fresh delitescing; in 7, with a spreading from the trunk to the head.

It was found that, in erysipelas of the head—as a mean of 29 observations—the pulse was, on the first day of the disease, 109; while elsewhere—as a mean of 54 observations—it was 121. On the second day, in erysipelas of the head, the pulse—as a mean of 33 observations—was 104; elsewhere, as a mean of 50 observations, it was 111. The pulse, therefore, appears to be rather less frequent in erysipelas of the face and scalp; but the contrary is observed in erysipelas of the breast, for in this situation the mean frequency from 12 cases, on the first day of the disease, was 131.

The *respiration* was nearly always increased upon the first day of the disease; on the second and third days, it slightly decreased; on the fourth and fifth days, slightly increased again.

Delirium occurred in 65 out of 217 cases—41 in men, 21 in women. It was observed in 13 cases on the first or second day; in 21, on the third or fourth; in 19, from the 5th to 7th; in 7, from the eighth to the tenth; in 3, after the tenth; in 2, the day was not determined. On the day in which the delirium was observed, the erysipelas was principally seated in the head in 36 cases; on the trunk in 10 cases; on the upper extremity in 4 cases; lower extremity in 14 cases; and in 1 case, the seat was not determined.

Of Fenger's 260 cases, 33, or one-eighth, died:—

Day of disease, 2, 4, 5, 6, 7, 8, 9, 10, 12, 13, 14, 15, 17, 21, 23, 31, 36, 44.
Died, 1, 2, 2, 4, 2, 5, 4, 2, 1, 1, 1, 1, 2, 1, 1, 1, 1 = 33.

Eight died with typhoid symptoms, 3 with nervous fever, 4 with arachnitis, 5 with peritonitis, 2 with arachnitis, pleuritis, and peritonitis, 2 with pneumonia, 1 with purulent metastasis, 1 with large critical abscess, 1 with eruption of fresh erysipelas, 1 with arteritis and phlebitis, 2 were complicated with delirium tremens, 2 with suppurative arthritis of knee, and 1 with hypertrophy of heart.

During a period of three and a half years, 4863 patients were admitted in the Fredericks Hospital; among these, 217 cases of simple erysipelas, of which 20 were instances of return of disease in the same individual, leaving 197 cases of primary attack. In the following table, Fenger gives the number of men of all

ages labouring under this disease, the number of various ages in the hospital, the relative frequency to 1000 of the disease at the various ages in men, the same as regards women, and then the relative frequency of the disease, as to age and sex, in both sexes.

Age.	MEN.			WOMEN.			Of 1000 patients of both sexes yearly attacked with erysipelas.
	With erysipelas.	Patients in hospital.	Of 1000 yearly attacked with erysipelas.	With erysipelas.	Patients in hospital.	Of 1000 yearly attacked with erysipelas.	
0–7	1	50	20	2	40	50	33
8–15	1	197	5 } 31	8	116	69 } 74	29 } 48
16–20	18	405	44	21	265	79	58
21–25	24	648	37	27	342	79	52
26–30	14	444	32 } 36	10	244	41 } 63	35 } 45
31–35	5	406	12	9	122	74	26
36–40	7	253	28 } 18	3	121	25 } 49	27 } 27
41–45	11	229	48	3	70	42	47
46–50	4	165	24 } 38	2	101	20 } 29	23 } 35
51–60	12	229	52	5	142	35	44
61–70	3	107	28 } 42	4	96	42 } 40	34 } 41
Above 70	0	19	...	2	34	59	38
Uncertain	1	16	...	...	2	0	...
Total	101	3168	32	96	1695	57	41

In regard to the season most favourable to the occurrence of erysipelas, Fenger found that, from November to April, 22 cases in 100 occurred, and from May to October, 18 cases. In 1838, which, in England, was a year characterized by its low temperature and unusual amount of moisture throughout, the deaths from erysipelas were considerably above the average. The deaths during winter, with an average temperature of 36°, were 106—57 males, 49 females; during the spring, with an average temperature of 53°, 105—57 males, 48 females; during the summer, with an average temperature of 61°, 88—43 males, 45 females; and during the autumn, of which the temperature is not given, 106—61 males, 45 females.

To show that the disease is one of the *cold seasons*, Dr. Bird presents the following statement:—

	Winter.	Spring.	Summer.	Autumn.	
Average of 10 years	101.00	87.0	79.0	98.0	
Weekly average . .	7.10	6.9	6.1	7.7	
1848	195	129	128	126	cases of deaths from erysipelas.
1849	127	113	99	109	" "
1854	96	115	109	128	" "
	418	367	336	363	

Duration of the disease, to the day when the pulse returned to its normal beat, and a healthy appetite was experienced, in 191 cases was as follows:—

Day	2,	3,	4,	5,	6,	7,	8,	9,	10,	11,	12,	13,	14,	15,	16,	17,	18,	19,	20,	21,	22,	26,	27,	34,	uncertain.
Cases . . .	3,	9,	12,	10,	10,	8,	15,	7,	16,	8,	21,	11,	10,	6,	5,	8,	2,	3,	6,	4,	2,	1,	2,	1,	5.

Thus one-half (96) of the cases terminated favourably by the tenth day, which may be taken as the *probable* duration of the disease.

During four years, 1838–'41, 260 cases of erysipelas were observed, namely:—

	Cases.	Died.	Convalescent on the 9th day.
In 1838 . . .	30	4 = 1 in 7.5	10 = 1 in 3.0
" 1839 . . .	75	9 = 1 in 8.3	20 = 1 in 3.8
" 1840 . . .	82	8 = 1 in 10.3	35 = 1 in 2.3
" 1841 . . .	73	12 = 1 in 6.1	27 = 1 in 2.7

In 1841, the disease was so serious that, of 69 deaths from all diseases, 12 were from erysipelas; nor did any single disease take off half so many as this. The following was the ratio in the several months:—

In December, of 30 sick, 4 died, and 12 were convalescent on the 9th day.
" January, of 26 " 2 " 12 " "
" February, of 19 " 2 " 8 " "
Total cases in the three months, 75; total deaths, 8 = 1 in 9.4; total convalescent by ninth day, 32 = 1 in 2.3.

In March, of 14 sick, 2 died, and 2 were convalescent on the 9th day.
" April, of 26 " 5 " 9 " "
" May, of 12 " 2 " 3 " "
Total cases in the three months, 52; total deaths, 9 = 1 in 5.8; total convalescent by 9th day, 14 = 1 in 3.7.

In June, of 18 sick, 1 died, and 6 were convalescent on the 9th day.
" July, of 20 " 4 " 7 " "
" August, of 17 " 2 " 6 " "
Total cases in the three months, 55; total deaths, 7 = 1 in 7.9; total convalescent by 9th day, 19 = 1 in 2.9.

In September, of 19 sick, 3 died, and 6 were convalescent on the 9th day.
" October, of 26 " 1 " 12 " "
" November, of 33 " 5 " 9 " "
Total cases in the three months, 78; total deaths, 9 = 1 in 8.7; total convalescent by 9th day, 27 = 1 in 2.9.

With regard to the influence of sex, it was found that, of 217 cases—111 men and 106 women—of the men, 16 died, = 1 in 6.9; of the women, 10 died, = 1 in 10.6. While of the men, 40 = 1 in 2.8 were convalescent on the 9th day, and of the women, 40 = 1 in 2.7.

With regard to the influence of age, it was found that of—

3 cases in patients of 7 years and under, none died, and 2 were convalescent on the 9th day.
9 " " 8 to 15 years, 2 " 4 were convalescent on the 9th day.
39 " " 16 to 20 " 2 " 16 were convalescent on the 9th day.
51 " " 21 to 25 " 4 " 22 were convalescent on the 9th day.
Thus of 102 cases in patients of 25 years and under, 8 = 1 in 12.8 died, and 44 = 1 in 2.3 were convalescent on the 9th day.

24 cases in patients of 26 to 30 years, 1 died, and 6 were convalescent on the 9th day.
14 " " 31 to 35 " 0 " 8 were convalescent on the 9th day.
10 " " 36 to 40 " 2 " 8 were convalescent on the 9th day.
Thus of 48 cases of patients of 40 years and under, 3 = 1 in 16 died, and 22 = 1 in 2.2 were convalescent on the 9th day.

14 cases in patients of 41 to 45 years, 4 died, and 3 were convalescent on the 9th day.
6 " " 46 to 50 " 2 " 0 were convalescent on the 9th day.
17 " " 51 to 60 " 3 " 9 were convalescent on the 9th day.
7 " " 61 to 70 " 3 " 2 were convalescent on the 9th day.
2 " " beyond 70 " 2 " 0 were convalescent on the 9th day.
Thus of 46 cases in patients between 41 and 70 years, 14 = 1 in 3.3 died, and 14 = 1 in 3.1 were convalescent on the 9th day.

Of uncertain age, one case—which terminated fatally.

In forming a prognosis in erysipelas, the condition of the pulse is of great importance. To determine this question, Dr. Bird gives the following table:—

Mean frequency of the pulse.	In fatal cases.	Number of observations.	In those convalescent on the 9th day.	Number of observations.	In those convalescent after the 10th day.	Number of observations.
First day	109	9	117	37	119	37
Second day	106	11	105	27	111	45
Third day	110	10	98	24	107	35
Fourth day	110	12	91	18	108	46
Fifth day	112	12	94	12	102	34
Sixth day	131	7	92	5	100	39
Seventh day	122	7	85	5	99	36
Eighth day	113	7	80	1	97	35

We have selected the foregoing as among the most interesting of the statistical results contained in the volume before us, in respect to certain important questions touching the pathology of erysipelas. The entire work of Dr. Bird is deserving of an attentive study on the part of all who desire to make themselves conversant with a disease which, even in sporadic cases, may, if its true character be misunderstood, give a great deal of trouble to the physician, and prove fatal to the patient; and which, when it prevails epidemically, is to be ranked among the most formidable of the maladies to which man is liable. D. F. C.

ART. XX.—*An Essay on Wasting Palsy; Cruveilhier's Atrophy.* By WILLIAM ROBERTS, B. A., M. D., Lond.; Physician to the Manchester Royal Infirmary, Fever Wards, and Lunatic Hospital; Lecturer on General and Morbid Anatomy and Physiology at the Manchester Royal School of Medicine, etc. With four lithographic plates. 8vo. pp. 210. London, 1858.

THE disease treated of by Dr. Roberts has, for its most striking characteristic, a wasting away with consequent loss of power of the muscles of animal life, resulting independently of lead poisoning.

It is a somewhat remarkable circumstance that the affection should have been until very recently almost entirely overlooked by the physicians of Great Britain, and of our own country—particularly when we consider the amount of attention it has attracted on the continent of Europe, and the fact that by Cruveilhier, Aran, Duchenne, of Boulogne, Oppenheimer, Wachsmuth, and a number of others it has been made the subject of special study.

In the work before us will be found a well arranged abstract of the present state of our knowledge in respect to the nature, causes, and treatment of wasting palsy, or, what it might with more propriety be called, muscular atrophy. He has culled with much industry, from every available source, the leading facts that have been observed and recorded, with such as have fallen under his own immediate notice, adapted to throw light upon its etiology, pathology, and therapeutics—these he has collated with much care and no little judgment, with a view to determine their legitimate teachings. In the performance of this work, Dr. R. has rendered an essential service to a large class of practitioners, who have not the leisure nor the opportunity of consulting the several publications from which he has derived his materials.

Wasting palsy, as already remarked, is confined strictly to the muscles of the life of relation—those that are under the control of the will. Although, in the majority of instances, it is confined to certain of the voluntary muscles, it may, nevertheless, involve in the same individual nearly all of them. Generally speaking, as Sir Charles Bell has remarked, it is "an affection of the muscles combined in action," but by no means invariably so.

In no case upon record have all the muscles of the body been found affected in the same individual—a few of the muscles, as those of mastication, and those of the eye, including the levator palpebræ, would seem to be altogether exempt from the disease.

The invasion of wasting palsy is usually slow and insidious—it creeps on unawares, and the subject of its attack only becomes aware of its presence on the occasion of some marked failure in the muscular power of certain—perhaps many muscles. When it has made some progress it is easily detected, either by the visible changes produced in the external conformation—by the absorption of the muscular masses, the displacement of bones, and the abnormal position of joints from loss of muscular support—or, by the failure of certain movements which contribute to outward expression or inward function, such as the facial physiognomy, deglutition, vocalization, or respiration; all of which depend on the operation of striped muscles under voluntary sway.

"The simple *disappearance of the muscles*," Dr. R. remarks, "causes very notable changes of configuration. The symmetrical rounded contour gives

place to a lean and withered aspect; the bony levers stand out in unaccustomed distinctness, and impart to the limb the appearance of a skeleton clothed in skin; but the skin itself, and the subcutaneous cellular tissue, have undergone no change, and cannot be distinguished from the integument of healthy parts. But loss of substance is not the only anatomical change observed. The natural equilibrium of the muscular forces is overset by the *unequal wasting* of the muscles; those less atrophied overcoming the resistance of those more deeply diseased. Hence arise very considerable, and sometimes peculiar, distortions of the heart, trunk, and extremities."

"But, perhaps, the most remarkable of all the anatomical changes are seen in the face, when the muscles of expression are destroyed. The intelligent countenance is veiled, as it were, by an impenetrable mask; no emotion changes its unvarying aspect—always solemn, stolid, and unmoved. The eyes, however, are spared, and by their movements alone (in the last periods) the immortal part holds some imperfect communion with the world around."

Wasting palsy frequently attacks the muscles of the interior, and a new class of morbid phenomena are observed.

"The tongue is often attacked, and a slight falter in the speech is one of the earliest indications that the disease is about to assume the general character; indeed, in two instances this was its starting point. Difficulty in masticating and swallowing food follows. The tongue can no longer move the morsel in the mouth in chewing; the patient fails to protrude it properly, and it has a soft, limp feel, and, not unfrequently, is the seat of violent tremblings. The involvement of the laryngeal muscles is known by a change in the voice, which loses its register, and is, finally, reduced to a single note. When the diaphragm and intercostals are reached, there are violent and suffocative fits of coughing; the play of the chest is reduced to a slight movement in the lower ribs, and the least impediment to respiration is now necessarily fatal."

Dr. R. presents in tabular form the most important particulars observed in one hundred and five cases of the disease. These show that the muscles of the trunk are less liable to be affected by it than those connected with the extremities; while of the latter, the muscles of the upper are far more liable than those of the lower limbs. The right arm is more frequently attacked than the left, and the hands oftener than the shoulders. When the disease occurs in the shoulders, it almost always includes the upper arm; another favourite combination is the forearm and hand. In no instance upon record have the muscles of the upper and forearm been associated in cases of muscular atrophy as the sole sufferers.

"In the upper limbs it may be said that the morbid action radiates from two centres; one in the hand, from which the forearm is invaded, and the other at the shoulder, from which are reached the muscles of the upper arm, and those which brace the shoulder-blade to the ribs. When the hand and forearm are destroyed, the evil does not then pass up the arm, but starts away to the shoulder or to the opposite hand. In the same way, when the shoulder is first attacked, the disease does not descend along the upper and forearm to the hand, but, passing over the elbow, it begins afresh in the ball of the thumb, and from that focus spreads up the limb, so that the parts latest reached are those about the elbow, especially the masses that take their rise from the humeral condyles. Whether a corresponding peculiarity in its extension exists in the lower extremities cannot as yet be ascertained, owing to the limited number of observations."

Dr. R. considers the symptoms of wasting palsy under two heads—lesions of motility, and lesions of sensibility. The lesions of motility are chiefly loss of power—with fibrillary tremors, cramps, twitches, and diminution of the electric contractility.

The loss of power is dependent upon the muscular atrophy, and goes on increasing with the diminution in the bulk of the muscle. The muscular vibrations consist in slight convulsive twitchings or quiverings of individual muscular bundles—they impart no movement to the entire muscle, but undulate over its surface, beneath the skin, in quick momentary tremors. They become more vivid and frequent under the application of cold, or when the affected muscle is pressed upon, or the limb is raised. The same thing happens when the skin is

filliped, or tickled, when violent movements are attempted, or a galvanic current is passed through the part. They are not continuously present, while their intensity varies from time to time. They cease upon the entire destruction of the muscle. They generally prevail spontaneously, but sometimes only when excited by cold air, pinching, or tickling.

Cramps and twitches differ from the tremors just referred to by producing a shortening of the entire muscle, and consequently a movement of the limb or part to which it is attached. They are sometimes accompanied with pain, especially at night, preventing sleep. Generally, they cease without producing any permanent mischief; occasionally, however, they cause the muscle to hold the joints in some unnatural position, giving rise to persistent deformity. They are to be considered as complications dependent on cold, and form no essential part of the symptomatology of the disease.

The electric contractility of a muscle affected with atrophy gradually diminishes with the diminution of its voluntary power.

Lesions of sensibility.—In uncomplicated cases the sensibility at the parts affected is unchanged. When the tongue is attacked with atrophy, neither its gustatory sense nor common sensibility is impaired. According to Duchenne, the special muscular sense survives to the last. There is neither pain, numbness, nor any other abnormal feeling. In very many—though still not in the majority of cases—pain, sensitiveness to cold, and even slight numbness are added to the more constant symptoms. Of these occasional symptoms, pain is by far the most common. Sometimes it is a slight wandering pain in the neighbourhood of the affected muscles; at other times, it is sharp and lancinating, having all the characters of neuralgia; or it may be of an aching kind, affecting the joints and substance of the muscles, resembling that of rheumatism. In several cases it marked the onset of the disease, and ceased as the atrophy became apparent; more generally it succeeded the latter, and marked its presence. It most commonly came and went at intervals, or continued for a time and then ceased entirely.

Pains in parts at a distance from the seat of disease are occasionally complained of; but of trifling intensity or evanescent in duration, and consequently of minor importance.

The general health—so far as regards the due exercise of the intellectual, digestive, circulatory, and nutritive functions—save, in respect to the latter, the atrophied muscles; in a word, the whole of the organic functions are performed with perfect regularity. Occasionally, as already explained, respiration is very seriously compromised; and, in cases of long standing, serous effusion takes place in the affected limbs, and the skin assumes a livid hue. These latter conditions are always the result of secondary and purely mechanical causes.

The most common complications of wasting palsy are neuralgiæ, either of the nerves of the diseased part, or of the opposite limb, or of the face. In some rare cases the disease has been found complicated also with tuberculosis, albuminuria, and mollities ossium.

The disease may terminate in *recovery*, with very slight, perhaps no deformity; permanent *arrest*, with more decided deformity, and death. When wasting palsy affects the muscles of the trunk, its termination is very generally fatal. In twenty-five cases only *four* are reported to have recovered, and *three* permanently arrested, *eighteen* having terminated fatally; while in twenty-four cases of partial wasting palsy, *five* recovered, *nineteen* were permanently arrested, and *none* terminated fatally. According to Dr. Roberts, the partial form in no way menaces life, unless, when by an extension of the atrophy, it passes over into the more fatal type.

The mean *age* of the patients in 88 cases of wasting palsy was $30\frac{1}{2}$ years. In the partial atrophies—49 cases—the average age was $32\frac{1}{3}$ years; and in the general—39 cases—$28\frac{1}{4}$ years. General atrophy is confined to no particular age, but occurs from childhood upwards, whereas the partial form is very rarely met with in individuals under adult age or over 50.

Of 99 cases in which the *sex* is mentioned, 84 were males, 15 females. In 70 instances the *occupation* and *social position* of the patients are given. Of these, 19 were in easy circumstances, and not mechanics, agriculturists, or labourers;

20 were mechanics, etc., including tailors, seamstress, and shoemakers; 34 were engaged in domestic and farm service, washing, housewifery, &c.; 2 were sailors, and several common labourers.

That the disease is common to the members of certain families, and hence probably due to a hereditary predisposition or taint, is proved beyond a doubt by a number of facts upon record. These show also that when hereditary the disease most generally attacks males, and is of the general or more fatal form.

The subjects of the disease have for the most part been individuals of excellent constitution, of good physical development, and gifted with ordinary intelligence. In a few instances it is said that the patients had been affected with a certain weakness from youth; but in the great majority of these cases the hereditary predisposition was evident, while one was not a simple case, being complicated with mollities ossium.

Of the other occasional causes the chief are undue muscular exertion, and exposure to cold.

Though the rule is well established that active muscular exertion is one of the most important conditions for the origin of the disease, it is by no means a necessary one, as exceptions frequently occur. So, also, it will be found that although in general the muscles most strained in the daily labour or occupations of the patient are those first attacked, this is not invariably the case. Persons following the same handicraft are not always seized in the same muscles.

Wearing damp clothing; rapid cooling of the perspiring surface; exposure to damp and cold, and to storms of rain and cold—all these have been distinctly shown to be effective exciting causes of wasting palsy.

When the atrophy is produced by cold it is more apt to extend to the muscles of the trunk than when it arises from overwork. It is a far more serious matter, therefore, for the atrophy to be traced back to cold, or to a wetting, than to over fatigue of the muscles. In more than one instance the disease is alleged to have been produced by cold combined with fatigue.

The pathological condition of the nerves and muscles of the life of relation—being those only which exhibit morbid changes in wasting palsy, have been examined with some care.

The muscles have been found wasted away to a greater or less extent, and changed in colour, being of a pale red, ochrey red, pale yellow, or buff; all of which shades may be present in the same patient. Some of the muscles, again, present yellow streaks of fat between the redder bundles. In other instances some muscles appear atrophied, without any trace of fatty degeneration, while others are streaked with fat, and others are converted into masses of pure fat, with scarcely a trace of muscular fibre.

"There would seem to be, in fine," as Dr. R. remarks, "a degeneration of the muscular fibrillæ; these gradually give place to a granular amorphous substance, which, in its turn, gives way to fat molecules; and, finally, these disappear, and the empty sarcolemma, if it have not previously deliquesced, thins away out of being, and nothing is left but the framework of connective tissue which held together the muscular bundles. In some instances the degeneration would seem entirely granular, and at no time fatty; in others fat is present in larger proportion, and sometimes it is exceedingly abundant."

In regard to the varying and conflicting results of the pathological examination of the nervous system in muscular atrophy, they are thus summed up by Dr. Roberts:—

"The nervous system was examined in thirteen cases.

"In two the spinal centre was sound; but the anterior roots and peripheral distribution of the muscular nerves were extensively diseased. In three cases there was inflammatory softening of the cord; accompanied, in two of them, with fatty degeneration and destruction of the anterior roots; and in one of these, of the peripheral muscular branches also. In the third case, the anterior roots and peripheral branches were healthy. In one case, there was amyloid degeneration of the cord, confined to the posterior median columns, and a granular degeneration of the peripheral muscular branches, but with entire preservation of the anterior roots. In two, the nervous centres and anterior roots were found, on the most rigorous investigation, perfectly sound. In the remaining four cases,

the nervous system was pronounced healthy so far as the examination was conducted."

Dr. R. enters into a somewhat extended inquiry as to the true pathology of wasting palsy; we can afford room only for his general conclusions, which are as follow:—

"We may look, therefore, for three orders of phenomena in wasting palsy.

"1. *Primary or direct.*—These are, destruction of muscle and consequent loss of power. They are necessarily always present, and, in the simple cases, are the sole factors in the problem.

"2. *Secondary or reversed.*—These include atrophy and fatty degeneration of the motor nerves, together with softening or other change in the spinal cord. These are not invariably present. Probably some of the neuralgic pains should find a place here; the nervous filaments ministering to the muscular sense, being involved in the general devastation, may be the source of those severe pains sometimes experienced in the substance of the affected muscles; but I am disposed to believe that most of the abnormal sensations and movements are the expression of the next order.

"3. *Tertiary or reflected.*—These may be produced through irradiation of impressions conveyed to the spinal centre by the nerves of the special muscular sense; or they may be the direct consequences of the secondary organic changes just described as going on in the part of the cord where the nerves of the decaying muscles originate, whereby the contiguous sound portions are irritated. In both these ways abnormal movements and feelings are provoked—undue sensitiveness to cold, neuralgic pains along the nervous trunks or in the joints, twitches, cramps, contractions, and fibrillary tremors.

"As a corollary to the foregoing demonstration—as I hope I may call it—stands the explanation of what has been a stumbling-block to Dr. Eisenmann, namely, the want of proportion sometimes observed between the wasting of the muscles and the loss of power, and the somewhat sudden advent of the latter in a few cases. The irritation of the cord, superinduced as above described, reacts in an untoward manner on the healthy muscles, or on the uninjured fasciculi of the diseased ones. When there is neuralgic pain the lowered muscular power occurs only as its usual accompaniment; and when there is none, the debilitating effect is still produced in the same way, and finds its parallel in the ephemeral palsies produced similarly by intestinal parasites or hysteria: they are all *derived* phenomena, either reflected viâ the spinal cord from the decaying muscles, or to be referred to the direct effect of the secondary organic changes taking place in that centre."

In regard to the *diagnosis* of muscular atrophy; when fully developed the disease presents a characteristic appearance which it is impossible to mistake. In its early stage the physiognomy of the disease is less striking.

The partial form may be confounded with paralysis from injury to or *pressure* on a *motor nerve*. From this, however, it may be distinguished by the fact that such paralysis and its consequent atrophy is strictly limited to the parts supplied by the affected nerve; and, if the nerve be a mixed one, by an accompanying loss of sensation.

Lead palsy has strong points of resemblance with muscular atrophy. The first, however, is, comparatively speaking, more sudden in its invasion; while the precursory phenomena are very different from those of wasting palsy. Lead palsy invades the muscles in a certain order. The extensors are its special prey, and, unless the disease has become general, the loss of power is entirely confined to them. The loss of power, also, is altogether disproportionate to the atrophy in recent cases—the wasting being *posterior* to the failure of strength—a limb may be entirely disabled by the poison of lead, while the mass of the muscles is still undiminished. A muscle palsied by lead loses entirely, or nearly so, its electric contractility; in cases of wasting palsy, this is not the case.

The palsy which follows the endemic colic of certain countries may be distinguished from muscular atrophy by its previous history, disclosing antecedent colic, brusque invasion of the loss of muscular power, and the fact that the wasting of the muscles followed, not accompanied, the palsy.

"Wasting palsy, when extensively diffused, is liable to be confounded with

general lead poisoning, and with the *general paralysis of the insane* under certain circumstances. With the former, confusion is scarcely possible with ordinary care; the physiognomy of the two diseases is altogether different, and the multiform signs and symptoms of lead intoxication cannot be mistaken or overlooked. In wasting palsy, on the contrary, the economy, as a whole, shows no indication of a blood-poisoning; but exhibits unimpaired soundness of all the nutritive functions, with the sole exception of the muscles. In long standing cases of general lead poisoning, the disease involves not only the muscles, but also the adjacent tissues."

In the general palsy of the insane, although the muscles waste and lose power, the limbs suffer uniformly, there is none of the *dissecting* character so remarkable in wasting palsy. The electric contractility is unimpaired in the former, while it is depressed in the latter affection.

"In other forms of cerebral palsy, their sudden advent, their range, the implication of the sensory nerves, the absence of emaciation in the affected muscles, the lively reflex activity of the latter, and their ready response to the electric stimulus, prevent the possibility of error."

The *essential paralysis of infancy and childhood* closely resembles wasting palsy; but it wants the dissecting character—all the muscles are equally affected, and the previous history of the case evinces a striking discrepancy with that of wasting palsy.

In cases of paralysis from injury or disease of the spinal cord, the loss of power is attended with some modification or loss of sensation. It is confined to, and uniformly distributed over, the parts below the seat of injury or disease. It often involves the sphincters of the bladder and rectum; it has come on suddenly; it is attended with rigid spasms; the electric contractility is preserved in the muscles; the occurrence of any of these conditions or circumstances is incompatible with the idea of wasting palsy.

Passing over the chapter devoted to the subject of *prognosis* in wasting palsy, we must close our notice of the very interesting work of Dr. Roberts, by quoting in full the summary of the treatment the author has found best adapted for the removal or arrest of wasting palsy.

"Adopting," he remarks, "the view of the pathology of wasting palsy advocated in this essay, the treatment naturally divides itself into two lines of indication. The object of the first is to arrest or cure the atrophy of the muscles; and that of the second, to combat the secondary phenomena. In dealing with the primary disease, our first endeavour must be to seek out the *exciting cause*, and obviate, if that be practicable, its continued operation. The handicraftsman must immediately renounce the practice of his mechanical art; the labourer must take off the strain from the overworked members. If cold and damp be the original excitant, they must be sedulously avoided in future, to escape the risk of a recrudescence or relapse. The *direct* treatment must have for its end, in the active stage of the malady, to restore the nutritive operations from their depraved estate to their original healthy tenor. This is accomplished by a judicious combination of perfect repose and regulated stimulation. Experience has shown that, for the latter purpose, no remedy approaches *galvanism*, which should be applied to the muscles daily, or every other day, in the manner directed by Duchenne. With galvanism may be combined gentle frictions of the parts affected, with some stimulating liniment; and if the means be at hand, warm sulphuretted or saline baths may be employed occasionally, as adjuvants to the local applications. When the disease has become stationary, more violent stimulation by electricity and friction must be resorted to, and cold bathing, with enforced exercise of the muscles, may be tried, if other means fail of effect. Remedies should be employed without loss of time, for when the atrophy has extensively affected the muscles of the trunk, or has remained stationary for a lengthened period, the chance of recovery diminishes in an accelerated ratio.

"The *secondary* phenomena, neuralgic pains, spasms, &c., are most effectually subdued by warm baths, and inunctions; or, if they obstinately persist, by morphia-dressed blisters over the painful tracks. Any ailment of the general system, or concurrent and independent disease, must be dealt with in accordance with the recognized canons of therapeutics." D. F. C.

Art. XXI.—*Journal de la Physiologie de l'Homme et des Animaux.* Publié sous la Direction du Docteur E. Brown-Séquard. Tome premier, Numero IV. Octobre, 1858. Tome deuxième, No. 5, Jan. 1859.

With the number for October, 1858, the first volume of M. Brown-Séquard's journal is brought to a close, and we must congratulate the editor on the successful career through the past year of the periodical he had the courage to initiate and the perseverance to continue. We presume it may now be considered as firmly established, and we trust it may long continue to represent the important branch of medical science to which its pages are devoted.

The number to which we refer compares favourably with those which have preceded it. The original memoirs are twelve in number, as follows:—

1. On the Variations in the Color of Venous Blood. By M. Cl. Bernard. (Two memoirs.)
2. Researches on the possibility of recalling Temporarily to Life Persons who have Died of Diseases. By M. Brown-Séquard.
3. On the Nutrition of Plants; with Remarks on Nutrition in Animals. By M. Verdeil.
4. Memoir on Hybridity in general, on Specific Differences in Animals, and on the Hybrid of the Rabbit and Hare. By M. P. Broca. (2d part.)
5. Experimental Researches on the Physiological Properties and Uses of the Red and Black Blood. By M. Brown-Séquard. (Conclusion.)
6. Researches on the Erectile Organs of the Female, and on the Tubo-Ovarian Muscular Apparatus in their connections with Ovulation and Menstruation. By M. Ch. Rouget. (Conclusion.)
7. Facts tending to show that the Anterior Columns of the Spinal Cord serve for the Transmission of Sensitive Impressions. By M. Nonat.
8. Researches relative to the Physiology and Pathology of the Annular Protuberance. By M. Brown-Séquard. (2d part.)
9. Note on the Corpuscles of Bone, and on the Development of Secondary Bone. By M. Ch. Rouget. (With a plate.)
10. Note on the existence of Rhythmical Contractions in the Excretory Ducts of the Principal Glands in Birds. By M. Brown-Séquard.
11. On the Effects following Ligature of the Œsophagus in Animals. By M. Trousseau.
12. Remarks on the Production of the Phenomena following Ligature of the Œsophagus. By M. Brown-Séquard.

Besides these memoirs, this number contains the usual variety in the way of extracts from other journals, translations, abstracts, &c.

The two memoirs by Bernard on the change of colour in venous blood are continuations of that previously published on the same subject. They are of so much interest, and are written in so philosophical a spirit that we are tempted to place an abstract of them before our readers.

Over a year since Bernard announced to the Academy of Sciences the important fact that when a muscle contracts, the venous blood flowing from it is very black, whilst that which flows from a gland in action is, on the contrary, of a bright red hue, quite identical in appearance with arterial blood. From his researches it follows that the blood of those glands which are not constantly in action is black or red according to the physiological condition which exists—that is, according as the gland is in a state of repose or activity. At the time Bernard simply announced the discovery of these facts. In the present memoirs he furnishes an explanation of the primary cause of the variation in the tint of the glandular venous blood, and also details experiments instituted for the purpose of ascertaining the difference in composition between the red blood of a gland in action and the black blood of the same gland in a condition of repose.

In regard to the cause of the change of colour, we quote the following passage as embodying the physiology of the subject.

"I desire to show at present that the particular chemical conditions which

render the venous blood of the glands red or black are due to the influence of two nerves having distinct points of origin and possessing actions in some respects antagonistic. That is to say, in other words, that there exists a glandular nerve which causes the venous blood to become red, and another nerve which by its influence renders it black. I will presently make it apparent that each of these nerves, in order to act chemically on the blood, modifies in a different manner the mechanical phenomena of the capillary circulation, so that a necessary correlation—easy to understand—is established between the chemical modifications which the blood undergoes in the organic tissues and the mechanical conditions of the capillary circulation which are under the control of the nerves."

In illustration of these views, he selects the submaxillary gland of the dog. The nerve which possesses the property of rendering the venous blood of this gland red, is a small branch arising from the lingual or gustatory branch of the fifth pair after it has been joined by the corda tympani. This tympanico-lingual branch accompanies the excretory duct, and is distributed to the substance of the gland.

Now, if by means of galvanism or other means exerted through this nerve, the gland is brought into a state of activity, the venous blood coming from it which previously was of a black color is rendered of a bright red hue. If the action is sufficiently energetic, this venous blood presents the same appearance as that of the arteries. The result constantly follows, and must be regarded as a physiological fact. It is also as definitely established that as soon as the preponderating influence of the tympanico-lingual nerve is withdrawn the gland ceases to secrete, and the venous blood becomes black.

The same result as that above detailed follows from impressions made upon the tongue by sapid substances. By such influences the venous blood of the submaxillary gland rapidly becomes red, but if the tympanico-lingual branch be cut as it is given off from the lingual nerve, no reddening of the venous blood is produced, and no matter how strong the impression made upon the tongue, the blood remains black.

The black colour which ensues in the glandular venous blood is not, however, due to a simple cessation in function of the gland. It is caused by another nerve which is constantly exerting its influence in a manner antagonistic to that of the tympanico-lingual. This nerve is derived from the great sympathetic. If it is divided its influence is cut off, and the tympanico-lingual having no force opposed to it rapidly causes the blood to become red. By irritating this branch of the sympathetic, its influence is made to predominate over that of the tympanico-lingual, and the venous blood of the gland is in consequence again made black. Nothing in the whole range of physiological science is capable of more conclusive demonstration than the facts we have stated.

In regard to the mode of action of these nerves, we have also, through M. Bernard's researches, very positive results. The principle which he enunciates is as follows:—

"The mechanical conditions of the capillary circulation determined in the submaxillary gland by the tympanico-lingual nerve, and by the great sympathetic, are exactly inverse."

Thus when the former of these nerves is excited, the blood flows through the gland more rapidly and becomes red; if, on the contrary, the irritation is applied to the sympathetic branch, the circulation is retarded, and the blood becomes black. Through the influence of the tympanico-lingual nerve the capillaries are rendered larger, and this dilatation may be so great as to allow the blood from the artery to enter the vein without losing the impulse derived from the heart, and it may actually be seen to flow *per saltum* from the cut extremity of the vein.

On the other hand, the sympathetic nerve contracts the capillaries and impedes the passage of the arterial blood into the vein. From these facts, it is evident that the blood flowing from the vein on excitation of the tympanico-lingual nerve partakes very much of the character of arterial blood, hence its red colour, whilst that leaving the gland whilst the action of the sympathetic is predominant, is essentially of a highly venous nature.

In the second memoir, M. Bernard demonstrates conclusively by analysis, that the black venous blood contains much less oxygen than the red, and that this latter is not far removed from arterial blood in its degree of oxygenation.

We do not know a more beautiful exposition of the importance of experimental physiology than that given us by M. Bernard in these two memoirs. The conclusions are arrived at so exactly and positively as apparently to leave no ground for subverters to stand upon.

The other memoirs of the number before us, whose titles we have quoted, are all of them highly interesting, and will amply repay a careful perusal.

In the fifth number, the first of the second volume of this valuable journal, we have a collection of memoirs in no way inferior to those contained in any previous one. The titles of these are as follows:—

1. Experimental Researches on the artificial production of Bone by transplanting the Periosteum, and on the regeneration of Bone after resections and complete ablations. By M. Ollier. (With two plates.)
2. On a new Function of the Placenta. By M. Claude Bernard. (With one plate.)
3. On some points in the Anatomy and Physiology of the White Corpuscles of the Blood. By M. Charles Robin.
4. Researches on the Abdominal Nervous System of the *Caïman a Museau de Brochet.* [Alligator Mississippiensis.] By M. Jacquart.
5. New Researches relative to the transmission of Sensitive Impressions by the Spinal Cord. By M. Brown-Séquard.
6. Congenital Inequality of the two Halves of the Body—Singular Physiological Consequences. By M. Paul Broca.
7. On the Amyloid Bodies and their *Rôle* in the Constitution of the Animal Tissues. By M. Ch. Rouget.
8. Experimental and Chemical Researches on some points in relation to Asphyxia. By M. Brown-Séquard.
9. On the Source of the Glycogenic Matter in the Herbivora. By M. A. Sanson.
10. On some cases of Disease of the Skin depending upon Nervous Influence. By M. Charcot, with remarks by M. Brown-Séquard.
11. On Rhythmical Movements in the Diaphragm and Muscles of Animal Life after their separation from the Nervous Centres. By M. Brown-Séquard.
12. On the presence of the Foramen of Botal in the Heart of the healthy Adult. By M. J. W. Ogle.
13. Researches on the Physiology and Pathology of the Annular Protuberance. By M. Brown-Séquard.

In addition to the original memoirs, we have the usual quantity of matter in the way of abstracts, translations, &c., much of which will be found of interest, and in order to supply the whole of M. Ollier's paper, part of the April number is appended to the present.

The results contained in the important and indeed remarkable memoir of M. Ollier have already been announced through other channels, but seem to be presented here in a more connected manner, and with more elaborateness of detail than previously. The fact that the periosteum is the regenerator of bone has long been known to physiologists and surgeons, but never before have we had such thorough demonstration of its truth as now through M. Ollier's researches. An abstract of his memoir will, we are satisfied, prove not unacceptable to our readers.

M. Ollier divides his experiments into three classes.

1st. Those in which the strip of detached periosteum was left more or less adherent to the bone. The strip was grafted among the muscles, or placed immediately under the skin, but it continued to receive vessels from the bone.

2d. Those in which the strip was entirely cut away from the bone, three, four, or five days after the transplantation, so as to interrupt all communication with the bone.

3d. Those in which the strip of periosteum entirely separated from the bone and the rest of the periosteum was immediately transplanted to neighbouring or distant parts of the body.

The tibia was chosen for the experiments of the first series. The general manner of proceeding was as follows, rabbits being the animals selected.

An incision was made along the crest of the bone, the muscles which covered the portion necessary to be exposed being carefully pushed aside. The periosteum was thus, in the first place, isolated from all the surrounding soft parts. The strip of periosteum which it was desired to detach was then marked out with the point of the scalpel, and dissected off from the bone beneath, but left attached by one extremity to the rest of the membrane. A situation was then selected either under the skin or among the muscles, and the band of periosteum was then securely fixed in its new position by a suture passing through the free extremity.

When the animal is vigorous, no inconvenience is experienced from the foregoing operation.

During the first two or three days the periosteal band gradually swells, and can readily be distinguished through the superimposed soft parts if the inflammation be not too great. At the end of three or four days it becomes more consistent, and in a short time is as resistant as cartilage. It sometimes acquires a considerable degree of thickness, and becomes as large as the tibia itself.

If after the lapse of from five to seven weeks, the animal subjected to an operation such as above described, be killed, a mass of true bone will be found to have grown from the under surface of the detached band of periosteum of circular, spiral, or such other shape as may have been given to the strip in the first instance.

If, however, the animal be old—five years for instance—the strip of periosteum exhibits but very little trace of ossificatian. Hence, as M. Ollier remarks, we have an additional proof that the osteogenetic faculty of the periosteum diminishes with age, though it is not altogether abolished.

From the second series of experiments similar results were obtained. Bone was found to have formed, though the strip of detached periosteum was entirely severed from its connection with the remainder, three or four days after the operation.

Even in the third series, in which the strip of periosteum was at once entirely separated from all connection with the bone, and only connected with the soft parts by a few muscular fibres, true bone was found growing from it six weeks after the operation. It was found that the osteogenetic faculty of the periosteum was not of the same degree in all parts of the body. Thus, in the transplantation of the pericranium but few ossific points were seen, and these were exceedingly small.

A great many important points are next discussed. These relate to the character of the bone obtained by the transplantation of the periosteum, its mode of development, &c. &c. In the second part the regeneration of bones after their extirpation, the reproduction of the articulations, &c., are considered.

From his researches, Mr. Ollier deduces the following conclusions, all of which are, we think, abundantly sustained by the facts he has established.

1st. The production of bone continues on the under surface of the transplanted periosteum. Moreover, when this membrane is grafted, new bone is obtained adherent to the bone to which the periosteum has been attached, or entirely independent, according as the periosteal band has been left continuous with the rest of the periosteum, or altogether detached.

2d. In transplanting strips of periosteum, bone is obtained of various dimensions and figures, such as circles, spirals, &c. &c., according to the extent and position of the strip. Entire control of the process of ossification is thus obtained, and it can, therefore, be directed at will.

3d. The bone thus obtained is true bone, constituted of the anatomical elements which characterize the osseous tissue, so that as organization advances these elements are disposed as in normal bone. There is thus formed a compact exterior layer, with a medullary cavity interiorly. This cavity is filled with marrow of the same character as that found in ordinary bone.

4th. The new bone is developed in the subperiosteal blastema which exists normally on the internal surface of the periosteum. This proposition is demonstrated by the examination of the development of the new bone, and by experimentation whence exact and conclusive results are obtained.

5th. The blastema is specially constituted of nuclei, free or inclosed in cells, swimming in a semi-liquid or finely-granular matter, and mixed with a greater or less quantity of fibrous elements.

These several embryonic elements are developed and multiplied in the primitive amorphous exudation furnished by the capillaries of the periosteum.

6th. A cartilaginous substance is met with when the subperiosteal product is observed during the first few days which follow the transplantation, but the growth of the new bone is effected without the intermediation of this element. This cartilage, moreover, differs in its anatomical elements from normal articular cartilage.

7th. The bone from which a strip of periosteum is removed, presents at the end of a certain time, an analogous membrane covering the denuded part.

8th. When a bone, or a fragment of bone, the periosteum of which is preserved, is removed (that is to say, the membrane being left in the wound adherent to the parts which normally surround it) this bone, or portion of bone, is more or less perfectly reproduced at the end of a certain time. The regeneration is in some cases very complete. The surrounding soft parts cannot supply the periosteum. They are not directly concerned in the process of ossification.

The production of bone is proportional to the amount of periosteum left in the wound. When the entire thickness of a bone is removed, this membrane alone can be looked to for the reproduction of the extirpated part.

9th. After the resection of the articular surfaces of two contiguous bones, a new articulation is formed if the capsule and the ligaments are allowed to remain connected with the periosteum of the resected bone. The two osseous extremities are regenerated separately.

Viewed from a surgical point of view, the importance of M. Ollier's researches can scarcely be over-estimated, and will be readily admitted by all intelligent surgeons.

M. Cl. Bernard's memoir is also of much physiological interest. As early as 1854, M. Bernard announced that the glycogenic function of the liver did not commence till a somewhat advanced period of fœtal existence. Nevertheless he found that from the commencement of organization, the tissues of the fœtus contained either sugar or glycogenic matter, which seemed to be essential elements in their development. Experiment satisfied him that this glycogenic matter did not come from the mother. There was, therefore, an obscurity in regard to its origin, which M. Bernard has been for a long time labouring to dispel, and finally with success.

For several years past, M. Bernard has examined the placentas of calves and sheep, obtained from the *abattoirs* of Paris, without ascertaining that they contained in any part the least trace of glycogenic matter. Notwithstanding this want of success, he continued his researches with the placentas of rabbits, guinea pigs, &c. In these animals he found that there is in their placentas a white substance formed by the epithelial or agglomerated glandular cells. He next ascertained that these cells, like those of the liver, were filled with glycogenic matter. The mass of glycogenic cells appeared to be situated between the maternal and fœtal portions of the placenta, and being developed, seemed to become atrophied as the growth of the fœtus proceeded. It was thus determined that the placenta in rabbits and guinea pigs is formed of two portions, having distinct functions—the one vascular, persisting till birth; the other secreting glycogenic matter, and having a more limited existence.

Returning then to his investigation on ruminants, M. Bernard discovered a remarkable disposition of the placenta which, not having been previously known, had been the cause of his former ill success in his earlier researches. He found in animals of this order, that whilst the vascular portion of the placenta accompanies the allantois, and is expanded over its external surface, the glandular portion is separated from the remainder, and is developed on the internal face of the allantois. This glandular portion secretes the glycogenic matter, whilst the liver is in an undeveloped condition; but as this organ becomes fit to assume its functions, the hepatic placenta (as it may be called) atrophies, and finally disappears.

The subject is still further discussed in relation to several important points, but we have only room for the conclusions which M. Bernard deduces from his investigations.

1st. There exists in the placenta of the mammalia a function which, till now, has remained unknown, and which coincides with the absence of the glycogenic function of the liver, during the earlier stages of embryonic existence. This function is localized in a transitory, glandular, or epithelial anatomical element of the placenta, which, in certain animals, is found mingled with the vascular portion of the organ; but which, in ruminants, is separated in such a manner as to form on the amnios a structure having the appearance of epithelium, and which, doubtless, has been frequently observed, but of which the physiological signification has not hitherto been perceived.

2d. This temporary hepatic organ of the placenta, in permitting us to study directly in an isolated anatomical element, the production of glycogenic matter, confirms and completes by a new example, that which I have said for a long time, that the formation of the amylaceous glycogenic matter is a faculty common to the animal and vegetable kingdoms. The observations contained in this memoir furnish us with yet further analogies, since we see the amylaceous glycogenic matter is accumulated around the embryo, and in its tissues, whilst in plants it is contained in the granules surrounding the vegetable embryo.

3d. We see, therefore, that with animals the glycogenic function commences with the life of the fœtus, and before the organ which performs this office in the adult is developed.

4th. All that we have said in this memoir relates only to the glycogenic function of the liver; but we should also seek to ascertain if the biliary function which the liver performs in the adult is not likewise accomplished by the placental hepatic organ which we have described. The question may be stated as follows: Do the same glandular cells perform both functions which, from that time become united, or, on the contrary, should not the liver be regarded as a complex organ, in which are found mingled two distinct sets of anatomical elements, the one designed for the secretion of amylaceous matter, the other for the formation of bile? This question, which has not yet been resolved by anatomists, notwithstanding the numerous works written upon the histology of the liver, appears to me capable of receiving much light, and even of being decided by physiological researches made, on the one part, on the embryonic development of the function, and on the other, on the inferior animals. I have undertaken investigations upon this subject, the results which will be communicated to the Academy as soon as they are terminated.

For the other memoirs we must refer our readers to the *Journal*, as we are unable at present to notice them more in detail. We would, however, call attention to the admirable paper of M. Robin, on the white corpuscle of the blood, which is worthy the careful perusal of physiologists. W. A. H.

ART. XXII.—*Diphtheritis: a concise Historical and Critical Essay on the late Epidemic Pseudo-Membranous Sore Throat of California* (1856–57), *with a few Remarks illustrating the Diagnosis, Pathology, and Treatment of the Disease.* By V. J. FOURGEAUD, M.D. Sacramento, 1858. 8vo. pp. 44.

Observations on Diphtheritis. By WILLOUGHBY F. WADE, B.A., M.B., T.C.D., Physician to the General Dispensary, etc. London, 1858. 8vo. pp. 32.

THE recent occurrence of extensive epidemics of diphtheritis in different portions of Europe and of the United States has directed anew the attention of physicians to the investigation of the pathology and therapeutics of this disease.

Diphtheritic or pseudo-membranous inflammation of the throat is believed by many writers to be a disease *sui generis*, differing essentially from croup, the severer forms of anginose scarlatina, and the so-called putrid sore throat; while there are others who contend that the affection of the throat in all these diseases is identical, differing only in respect to the amount of the membraniform exudation, its greater or less thickness and consistence, and its extension or non-extension into the larynx and trachea.

The first of these views is strongly advocated by Dr. Fourgeaud. He bases its support mainly upon the opinions and statements advanced by certain European physicians. By Dr. Wade, on the other hand, the correctness of views directly opposed to those advocated by the former gentleman are as earnestly insisted upon.

There exist, besides the above, other very important differences between the respective theories in regard to the disease entertained by these two gentlemen. Thus, according to Dr. Fourgeaud, diphtheritis is a strictly local affection, and one which, when properly treated in its early stages, is among the most manageable and least fatal of any which fall under the notice of the physician; while Dr. Wade, on the other hand, believes that a disease attacking, like diphtheritis, so many of the organs, either directly or indirectly, and in which the primary local mischief is so disproportionate to the subsequent danger, must be something more than "a simple throat disease," although it may ostensibly commence in that anatomical region; a disease, too, that he would class with the most terrible and fatal of those to which the human organism is liable.

The views thus advocated in the two publications before us, exclusive and contradictory as they would seem to be, may both be received as perfectly correct. A diphtheritic affection of the fauces may unquestionably prevail unattended by the symptoms of croup or scarlet fever, and without the presence of gangrene or putridity, properly speaking, of the throat; consequently, pseudo-membranous angina may with propriety be declared to be a disease distinct from croup, scarlatina, or putrid sore throat. Diphtheritis, it is very certain, may occur as a strictly local affection, readily controlled when correctly diagnosed in its early stage, and properly treated. It is not the less true, however, that the exudative inflammation, together with its pseudo-membranous product, is the same in all the cases in which it occurs; that the distinction that has been attempted to be set up between the diphtheritic deposit in pseudo-membranous angina, in scarlatina, and in croup, is not borne out by the result of close and accurate observation. It is a well-known fact that the extension of the diphtheritic deposit into the larynx and trachea, as sometimes takes place in cases of pseudo-membranous angina and scarlatina, gives rise to all the symptoms pathognomonic of idiopathic croup, and the same morbid condition of parts is discovered after death. The so-called diphtheritic inflammation we have already admitted may, in some cases, and even in entire epidemics, be a strictly local affection, and constitute the entire disease; but in general, and in all the more violent cases and epidemics, whether of scarlatina or pseudo-membranous angina, the affection of the throat would appear to be unquestionably the result of some general morbid condition of the system, most probably originating in and kept up by a diseased state of the blood. This, which constitutes the most unmanageable and fatal form of diphtheritic angina, may be the result of the poison of scarlet fever, or of some other morbific poison prevailing in the air under particular circumstances, of the nature of which we are as yet ignorant. The disease bearing in this respect, in many of its features, a close analogy to certain of the forms of epidemic erysipelas, in which the entire set of symptoms are due evidently to systemic causes.

To any one who will take the trouble to carefully examine all the facts bearing upon the question it will be evident, we think, that the disease described by Fothergill, Huxham, and other of the older writers, as putrid or gangrenous sore throat, was nothing more nor less than either cases of malignant scarlatina, or severe and protracted cases of diphtheritic angina, in which the patches of deposit in the throat becoming thick, dark, or ash-coloured, and occasionally softened and exhaling a fetid odour, have been evidently mistaken for gangrenous sloughs, which, when they separate, we are told, are quickly succeeded by others. An extent of sloughing, such as is described by some writers as taking place in putrid angina, could not possibly occur without causing bloodvessels to be opened, and a denuding or even destruction of the subjacent bony structures, but especially of such unresisting structures as the uvula, soft palate, and tonsils; a state of things, however, of which no mention is made in any of the descriptions furnished us of the most malignant epidemics of the so-called putrid sore throat.

In an account of diphtheritis as it prevailed in California, communicated by Dr. J. Blake to the session of the Medical Society of that State, held February, 1858,

although the opinion is advocated that the disease is of the zymotic class, and caused by some peculiar external influence which acts upon the entire system, yet its entire distinctness in its cause and nature, and, consequently, it its treatment also, from croup, scarlatina, and cynanche tonsillitis is insisted on. Its diagnosis from croup Dr. B. lays down in the words of Dr. Stokes, borrowed from his work on the diseases of the lungs and windpipe (Dublin, 1837); to which but slight objection can be made. The distinction, according to Dr. Blake, between diphtheritis and the exudation of the throat in scarlatina, is based mainly on the difference in the appearance of the exudation in the two cases, it being whiter and of a softer pultaceous consistence in scarlatina, and grayer and more tenaceous in diphtheritis. This asserted difference in the appearance of the exudation of the throat in diphtheritic angina, and in croup and scarlatina, is much insisted upon also by several of the English writers who have furnished us with accounts of the recent epidemic. We cannot conceive the propriety, however, of basing upon this fact alone, even though it should be finally established, so important a doctrine as that which teaches the independent and specific character of diphtheritis.

The essay of Dr. Fourgeaud is devoted rather to a consideration of the pathology of diphtheritis generally than to a history of the disease as it appeared in California during 1856–57; the conclusions of the writer being drawn from the facts and observations recorded by others, and adopted by him without any very close analysis, rather than from those which fell immediately under his own notice.

The observations of Dr. Wade contain merely an account of the symptomatology of diphtheritic angina, with an introductory chapter, comprising a brief though imperfect history of the disease, such points only being touched upon as seemed to the author necessary to a correct study of the subject. He purposes, in another publication, to further elucidate the disease by discussing the pathology and therapeutics of diphtheritis, upon which, as it seems to him, there prevails at present a great confusion of opinion.

The work of Dr. Wade is, of the two, the most erudite and strictly logical in its analysis of the views and observations that have been recorded by the leading writers in respect to the causes and nature of the disease of which it treats.

One of the most interesting features in the observations of the latter gentleman is his remarks upon the occurrence of albuminuria in cases of diphtheritis, a phenomenon which he assures us he certainly found to be very common in the fatal cases of the disease which occurred in Birmingham, and which he believes, judging from the descriptions given by former writers, was not less common in the disease as seen by them.

"The occurrence of hæmaturia at a late stage has," he remarks, "long been known; but it was supposed, and perhaps rightly, to indicate merely a purpuric condition of the blood, and to proceed probably from the mucous membrane of the urinary bladder. This opinion I held, in common I believe with every one else, till an opportunity was afforded me of examining the body of one dead of diphtheritis. I then found changes in the kidney, which will be more particularly described when we come to consider the morbid anatomy and pathology of the complaint, in consequence of which I made it a practice of more minutely examining the urine during life than I had previously done. This led to the discovery that albuminuria was not unfrequently present when there was no reason to suspect its existence from simple inspection of the water. That this differs materially from the hæmaturia above alluded to, appears from the absence of any other evidence of purpura, from the absolute absence of blood-corpuscles, as proved by microscopical examination, as well as by the colour of the urine, which may be neither red nor smoky. There are two circumstances which may lead us to suspect this complication, now that we are aware of its possibility—namely, a diminution in the quantity of the excretion, or the sudden disappearance of the lithate of ammonia." "At present, however, I can suggest no substitute for the careful examination of the urine at each visit, for there may never have been any deposit; and I am not sure that a slight increase in the *quantity* of the urine does not *sometimes* attend the earliest period of the kidney complication. It is sometimes very difficult in children to estimate accurately the quantity of urine passed, and if diarrhœa be present, impossible; and diarrhœa, I am disposed to

think, sometimes comes on at this epoch, and it is an important point for future observation to determine in what relation these two symptoms stand to each other.

"I had never met with any hint, either from authors on this subject, or from my professional friends, which indicated that they had discovered or suspected the existence of this most momentous complication; that it should have been so long overlooked is perhaps best accounted for by the apparently normal condition of the urine and the absence of dropsy, which I have *never* known to be present, nor have any authors, within my knowledge, alluded to dropsy as a symptom of diphtheritis. It is with great satisfaction that I am enabled to state that the correctness of my observation has been confirmed by many of my medical friends, since a fact of this kind, depending upon the veracity or capability of one observer only, is often received with much distrust."

"The specific gravity of such urine varies, as might have been expected; but I think it may be laid down pretty certainly that there is a diminution in the total amount of solid excreta, or, in other words, that the special functions of the kidneys are interrupted. Although this urine is often perfectly pellucid, and free from deposit, yet in some instances we find what I certainly should have been disposed to anticipate in all, viz., tube casts and renal epithelium. The tube casts may be of three forms, so far as I have at present observed, viz., firstly, what have been called 'small waxy casts;' secondly, casts of similar size, but granular, probably from commencing disintegration; and, thirdly, ordinary epithelial casts. Besides these objects, and perhaps even more common than they, are small masses of fibrin, of irregular shape, not moulded in the renal tubes; we generally find, also, epithelium from the bladder and other portions of the urinary passages. The tube casts and the granular epithelium often contain fat, in a state of subdivision, more or less minute."

In regard to the presence of albuminuria in certain cases of diphtheritis—and in no fatal case, since he has been aware of its existence, has Dr. W. failed to detect it—the question arises, Is it a necessarily fatal symptom? Which question Dr. W. answers by a decided negative; although present in all fatal cases, yet all cases in which its presence is ascertained are not therefore fatal. "The presence of albumen in the urine," he remarks, "is a common physical sign of a condition of the kidneys which interferes with their functional activity. I admit that in the present disease the quantity of albumen in the urine is generally—but, I again repeat, not necessarily—in direct proportion to the functional disability of the kidney, or, perhaps, even more accurately, to the retention within the body of those matters which should be excreted by the kidney; for we must not overlook the possibility of the renal offices being supplemented by other organs. This disability is to be estimated more perfectly by ascertaining the quantity of solids in the urine from a comparison of its quantity and specific gravity; a proceeding which, as I have before said, circumstances often render difficult. The best practical test is the vital one—the effects produced upon the other functions necessary to life, as learned from the symptoms which ensue. Proceeding in this way, we find that this complication may come on insidiously, not at once, and, indeed, sometimes not for weeks, reaching an extent which seriously affects the renal offices. Under such circumstances, all we can say of the cases is, that they seem, during its continuance, to be at a stand still: the throat mischief may be but limited, but it does not diminish; the vital depression may not be extreme, but it is persistent. In the only two really chronic cases that I have seen—one of which died at the end of five weeks, and the other did not begin to amend till nearly eight weeks after the first invasion—albuminuria was present, and they answered in every respect to the description which has been given by many authors of cases protracted for several weeks. It is worthy of notice that in the fatal case, which was not under my immediate observation, the albumen disappeared a day or two before death; I am not able to state whether this disappearance was coincident with any other improvement, or the reverse, in the physical condition of the urine. In the other case the disappearance of the albumen was concomitant with an increased excretion of urinary elements, and the first indications of returning health.

"When symptoms do arise contemporaneously with the kidney complication, they are those which have been universally described by writers as characteristic of that disease." D. F. C.

ART. XXIII.—*Anatomy, Descriptive and Surgical.* By HENRY GRAY, F. R. S., Lecturer on Anatomy at St. George's Hospital. The Drawings by H. V. Carter, M. D., late Demonstrator of Anatomy at St. George's Hospital. The Dissections jointly by the Author and Dr. Carter. London: Parker & Son, 1858. 8vo. pp. 750.

IT has often been with us a subject of regret that there existed no treatise in the English language in which the student could find the details of descriptive anatomy, combined, at the same time, with a concise account of the practical surgical relations of the various parts. It is true that we already possess many and valuable treatises both on descriptive and on topographical anatomy, but none, so far as we are aware, in which both regional and descriptive anatomy have been conjointly considered. The want of such a work has long been a void in the English literature of our science, and this void the book before us has been intended to fill. Whether or not the author has succeeded in his attempt, it will be for our readers to decide.

The very first glance at the volume upon our table tells us that it is one of a novel description—that it has been designed to address the eye of the student by the improved character of the illustrations, as well as to appeal to his intellect by the contents of the text. It is essentially a diagrammatic work, the value of which will be variously estimated by different readers. In the cuts, which are numerous and of large size, the old-fashioned system of numerations and foot-references has been discarded, and in its stead has been substituted the method —first, we believe, introduced by Mr. Holden—of printing in type the name of each anatomical part upon the representation of the object itself. The cut thus explains itself. It can be readily understood by the veriest tyro in anatomy, and loses entirely that semblance to an ingeniously contrived puzzle so often observable in some even of our best anatomical delineations. For ourselves, we must freely admit that, in our judgment, the mode of illustration adopted in the present volume cannot but present many advantages to the student of anatomy. To the zealous disciple of Vesalius, earnestly desirous of real improvement, the book will certainly be of immense value; but, at the same time, we must also confess that to those simply desirous of "cramming" it will be an undoubted godsend.

The peculiar value of Mr. Gray's mode of illustration is nowhere more markedly evident than in the chapter on osteology, and especially in those portions which treat of the bones of the head and of their development. The study of these parts is thus made one of comparative ease, if not of positive pleasure; and those bugbears of the student, the temporal and sphenoid bones, are shorn of half their terrors.

The chapters upon the ligamentous system, and the joints generally, structures so all-important, and, we fear, so often neglected by the student, are clearly written, and the accompanying cuts are such as to warrant our highest approbation. We would draw the attention of our readers particularly to the representations of the occipito-atloid and the atlo-axoid ligaments. A comparison of these cuts with the appearances presented by the drawings of similar parts in any of our other standard books on anatomy—Sharpey and Quain, or Wilson, for example —will at once evince the great superiority (in illustration, at least) of the work before us.

A feature in Mr. Gray's book, which ought not to be passed unnoticed, is the manifest desire of the author to extend the scope of the usefulness of his book. It is not intended only as a work of reference for the practitioner, or a volume to be studied by the student in his preceptor's office, but it is designed at the same time to serve and assist the student of anatomy in his labours in the dissecting-room. For this purpose the most minute directions are laid down relative to the manner of making a dissection; the position in which the subject is to be placed, the direction of the external incisions, and the proper order in which the tissues are to be varied, are all topics which are not considered beneath the dignity of our writer's pen. Nor are they; for although by some these matters may be

looked upon as trifling, yet by those who have so often witnessed the first blundering attempts and marring efforts of the youthful anatomist, any endeavour to obviate his difficulties will be thoroughly appreciated.

Another feature which strikes us in turning over the pages of the volume is the satisfactory order and arrangement in which adjacent parts are considered. We are not obliged, for example, when examining the anatomy of the muscles of the neck, to turn to another portion of the volume to find a description of the deep fascia of the same region. The requisite explanation is introduced in the proper locality, and in its natural order—that is, immediately after the paragraph in which the platysma myoid is described. By this method of presenting conjointly the description of the muscles and fasciæ a much more full and complete idea of the anatomy of a part in question is conveyed to the mind of the student. At the same time, a chapter on "Fasciæ," in most works dry and often obscure, is dispensed with.

We will not occupy the time of our readers by entering into any analysis of the chapters devoted to the familiar subject of myology. Of course we can look for nothing new; but we would merely remark, in passing, that at page 213 we are presented with a most satisfactory exposition of the muscles of the palate, accompanied by an illustration of which the student has long stood in need. We refer to a view of the pharynx, as laid open from behind, exhibiting the muscular structure, and the position of the tonsils. A great merit in this cut consists in its distinctness, affording, as it does, an admirable idea of the locality of the parts involved in Mr. Ferguson's procedure for the division of the levator-palati and palato-pharyngæi muscles in the operation of staphyloraphy. Believing, as we do, that the improvement suggested by this excellent surgeon is one which materially affects the success of any operation for cleft palate, we consider that the anatomy of this region deserves the most attentive study.

Following out the design expressed in the preface of the book, the author is constantly in the habit of introducing remarks tending to impress upon the student the necessity of applying his anatomical knowledge to the more practical and every-day points of surgery. To this end, at the termination of the description of the muscles of each extremity we are furnished with a chapter on the surgical anatomy of the part, and the student is desired to consider the effect likely to be produced by the action of the muscles in each particular fracture. These displacements are illustrated by diagrams, somewhat after the manner of Hinds's plates, and the general indications in the cure of each fracture are pointed out. The mode of treatment enforced by the author is mostly the application of the routine English apparatus, much of which has been long, and, we think, properly, discarded in this country.

The chapters upon the arterial system form one of the most prominent portions of Mr. Gray's book, and it is upon this section that the author has endeavoured to impress most strongly a practical character. Not only are the normal distributions of the arterial branches pointed out, but, at the same time, their most frequent variations. The author has also followed the description of each main trunk by a paragraph containing the standard formulæ for its ligation. We are glad to observe the stress which is laid upon the importance of regional anatomy, and the necessity of following out, during operations, the rule which has been so well characterized by Malgaigne as "the rule of the guiding points." The value of Mr. Gray's remarks on these subjects will be better understood if reference be made to the articles upon the carotid and subclavian arteries, and the anatomy of the triangles of the neck, or to his remarks upon the ligatures of the femoral or axillary arteries.

The venous system is one, also, in which the author has evinced care in description, more especially with reference to the position of the valves, a matter often almost ignored even in standard treatises on anatomy. We notice at pages 401 and 421 that single valves have been assigned to the terminations of the spermatic veins in the male, and to their analogues, the ovarian veins, in the female. This is a point to which, on a previous occasion, we have drawn the attention of anatomists, and we are glad to see the fact of the existence of the right spermatic valve in either sex now corroborated. At the same time, we do not agree with Mr. Gray as to the existence of a perfect valve at the termination of the left

spermatic vein in the left renal vein. Here our experience has demonstrated merely the presence of a triangular fold of the lining membrane of the vein, sufficient to influence the direction of the current from below upwards, but not sufficient to prevent regurgitation, as is done by the valve of the opposite side. These facts can be readily proven by an injection thrown into the primitive iliac vein so as to pass upwards into the vena cava.

The description of the brain and nervous system occupies about one hundred pages of the volume before us, and is well illustrated, the cuts of the fifth and eighth pair of nerves being particularly commendable.

The organs of the special senses also come in for a fair share of our author's attention, and the cut illustrating the position of the salivary apparatus is such as cannot fail to furnish the student an idea of the anatomy of parts of which he rarely obtains an accurate impression from his early dissections.

At page 649 we observe an omission, to which we draw attention, since it is a matter which generally escapes attention. We allude to the position of the bronchial septum of the trachea. The existence of this spur or ridge, and its influence upon a foreign body in the trachea passing towards the bronchial tubes, was first, we believe, pointed out by Mr. Goodall, of Dublin, and has since been most strongly insisted upon by Dr. Gross, in his valuable work upon foreign bodies in the air-passages. Frequent opportunities of observation have convinced us of the correctness of the assertion as to the existence of such a septum.

Our space will not permit us to enter into a further analysis of Mr. Gray's book, nor to notice, as we had intended, the chapters upon herniæ and the perineal region, which are replete with valuable surgical information. We have said enough, however, to furnish the reader with a general impression concerning the volume to which his attention has been directed. It is, in our estimation, an admirable and complete text-book for the student, and a useful work of reference for the practitioner; its pictorial character forming a novel element, to which we have already sufficiently alluded. Before taking leave of the volume, we would remark, in justice to one of the gentlemen engaged in its production, that although the text is from the pen of Mr. Gray, the illustrations are from the pencil of Dr. Carter, so that, in bestowing our meed of praise upon the book, we must remember that not a little credit must be referred to the gentleman last mentioned.

The press-work of the book evinces some carelessness, and frequent misprints and omissions betoken a hasty proof-reading; but these we have forborne to notice, regarding them, to a certain degree, although not altogether, as inseparable from the appearance of a first edition, and which, we doubt not, will be corrected hereafter.

In concluding our brief notice of this really excellent treatise, we would state that an opportunity has been afforded us of examining some of the proof-sheets of the American edition, to be issued shortly, which, as far as we have seen, fully equals the English copy in beauty of execution, while the typographical errors which had crept into the latter are corrected, and the index is greatly improved in its arrangement. J. H. B.

ART. XXIV.—*On Infantile Mortality, and the Establishment of Hospitals for Sick Children.* Read before the Dublin Obstetrical Society, January 8th, 1859. By WILLIAM MOORE, A. B., M. B., Trin. Coll., Dublin, M. R. I. A., Physician to the Hospital for the Diseases of Children, etc. Dublin, 1859.

IF the words quoted by Dr. Moore from the British and Foreign Medico-Chirurgical review, as a motto for his Essay, convey truths applicable to Great Britain, they do so to even a greater extent in reference to this country. Most certain it is that "the knowledge of our sanitary condition as a people is still most indefinite, and that still less defined is our knowledge of the measures best adapted to correct the causes of disease and death, which are daily and hourly

diminishing the efficiency, as well as curtailing the lives of our men, women, and children." It is only, however, so far as the correctness of this statement has reference to the infantile portion of the community that it concerns us on the present occasion.

The appalling waste of life which takes place during the first five years of existence, both in Europe and America, is a subject that demands the serious consideration of every thinking mind and feeling heart. The physician, especially, is called to the investigation of its causes, and of the means for its prevention, not simply in furtherance of the common interests of humanity, but from the intimate connection the subject has with an interesting branch of public and private hygiene.

The condition of the infantile portion of a population in respect to freedom from, or proneness to disease—in other words, the greater or less extent of the mortality that occurs during the first few years subsequent to birth—is, to a very great extent, the correct exponent of the general sanitary condition of that population, and of the wisdom or folly of its social arrangements and domestic economy.

"The places where the mortality among young children is the most rife are, of necessity, places where the survivors are apt to be sickly; and if they fight through a scrofulous childhood, to realize a stunted puberty, they become the parents of a still more unhealthy offspring than themselves, and less capable of mental and physical exertion. It cannot be too widely disseminated, says Mr. Simon, 'that a high local infantile mortality must necessarily indicate a high local prevalence of those causes which determine a degeneration of race.'"

In the Essay before us, Dr. Moore has presented some interesting statistics, showing the mortality of infants in the Kingdom of Great Britian. From these we learn the startling fact that, in England, nearly 26 per cent. of all born perish before the end of the fifth year; and that, in London, before the attainment of the tenth year, 35 per cent. perish. In Scotland, the mortality under five years of age, with reference to the general mortality, constitutes an average of 40 per cent.; and in Liverpool, at the same early age, a generation is nearly half exhausted. Of all born among the better classes, it has been ascertained that from 25 to 30 per cent. perish under ten years of age; 30 to 40 per cent. amongst the lower classes; and under epidemic influences, or other unfavourable circumstances, from 60 to 70 per cent. perish in the same limit of years. Of 14,450 boys existing under five years of age, 2,087 died, in Liverpool, in a single year; of 14,045 boys in the rural parts of the county of Surrey, only 699 died in the same lapse of time."

"Of 100,000 children living, under one year of age, not of the poorer classes only, nor of the sick only, nor exclusively in cities, but throughout England, and under all the ordinary conditions of life, it is believed that 17,355, or 1 in 6, die within the year. To parallel this proportion of mortality, we must pass from what should be the day spring of life to the age of decrepitude, and we find it first reached a second time between the 80th and 85th years of existence. Again, of 100,000 living under five years of age, 6,349, or 1 in 16, die within the year; a mortality which is not again attained till from the 70th to the 75th year. Of a like number, between the ages of 10 and 15 years, only 527, or 1 in 190, die; and between 30 and 45 years of age, 1143, or 1 in 88, die; of 100,000 living of all ages united, from the new born to the centenarian, 2,160, or 1 in 46, is the sum of the annual mortality. The average annual mortality of the nursling is, therefore, about 32 times, and that of the child up to 5 years of age about 12 times, that of the vigour of youthhood, and 5½ times that of the manly prime, or the one is about 8 times, and the other 3 times, that of the gross or general average of human existence."

In eight of the principal towns of Scotland, 46.5 of all children die under five years of age, namely: in Dundee, 55.1; in Glasgow, 52.90; in Leith, 47.5; in Greenock, 46.80; in Paisley, 46.7; in Edinburgh, 41.8; in Aberdeen, 35.50; and in Perth, 32. In the whole of Ireland, 18 per cent. of the children die before they attain their fifth year; In Drogheda town, 25.5; in the city of Cork, 23.5; in county Kerry, 22.9; in Belfast, 22.7; in the city of Waterford, 22.5; in the city of Limerick, 22.1; in the city of Kilkenny, 20.3; in Dublin, 20.2; in Gal-

way town, 20; and in the counties of Down, Monaghan, Queens, and Kildare, 14.4 to 14.9.

The chief causes productive of this waste of life in early infancy are, without doubt, those pointed out in a report on this subject, made to the American Medical Association: a defect of vitality at birth, transmitted to the child from one or both its parents; the mismanagement of infancy by parents, nurses, and quacks, in respect to feeding, dress, cleanliness, with the unnecessary administration of drugs, as purgatives, carminatives, vermifuges, calmners, purifiers, and strengtheners; and, finally, deficient light, air, ventilation, clothing, fuel, and wholesome food—deficiencies incidental to cities as compared with country towns and rural districts. To these causes may, perhaps, be added misconceptions or entire ignorance on the part of the mass of medical practitioners in regard to the true pathology and therapeutic treatment of many of the maladies incident to the periods of infancy and childhood.

"The extraordinary mortality among children in Australia," Dr. Moore remarks, "is one of the most painful phenomena of the present day. Of all inhabitants of the temperate zone, the return of the genial spring and summer brings to them not rejoicing but woe. The season which nature indicates as the time for the renewal of animal and vegetable life, becomes with them the season of death. It is hardly credible, if it was not for the accuracy of their statistical tables, that in Melbourne, during the summer months, the natural increase of population is actually checked, and that the number of births scarcely exceeds the number of deaths. For the months of December, January, and February last, the difference of births over deaths has been only *twenty-four*. There can be no stronger proof of the anomalous and temporary character of the social condition of this colony two or three years ago, or of its subsequent sanitary progress, steady, indeed, but presenting lamentable results, than a glance at the tables of births and deaths. For six months of 1853, the deaths exceeded the births in the proportion of 2 to 1; in 1854, the proportion was reduced to less than 3 to 2; in 1855, the births predominated as 21 to 17. This improvement continued in 1856; until in 1857, we had only 70 deaths for 100 births. These figures prove rather the astonishing degradation of their previous sanitary condition than the merit of their present social state. In the fourth year of progressive improvement, the mortality is still greater than that which is recorded in the deadliest plagues. In a delightful climate, amid abundance of wealth, the children die more quickly, and in greater numbers, than in a land of pestilence and famine. Nor is this all; we know the wonderful renovating powers of nature; we know how soon, after a population has been decimated by any of the great scourges of our kind, it soon recovers its former numbers and its natural tone. But in the present case, it is the very source of supply that is threatened; it is the children—the men and women of the next generation—that disappear with such terrible rapidity."

From Dr. Greenhow's recent valuable work on the sanitary condition of the people of England, as quoted in the Essay before us, we learn that croup, usually considered more fatal in damp districts, and by the side of rivers and marshes, is not so in fact; Lincolnshire and the fenny districts of England presenting a lower mortality from this disease than the northwestern or Welsh counties. Dr. Greenhow's statistics go to prove, also, that males suffer more from croup than females.

In the same work it is shown that the mortuary statistics of the infantile population would seem to be marked by an absence of any uniform relation "between the proportion of deaths from all causes and from particular diseases." Males die from nervous diseases in a much larger proportion than females. The male rate for England being taken at 100, the female at 75; in some places it is as low as 67 or 68; in others, as New Castle-on-Tyne, it is as high as 91.

Some curious facts in reference to the nervous diseases of children are revealed by the report of Dr. Greenhow. Thus, for every hundred of the males of Liverpool that die from these diseases, more than one hundred and forty perish in Carnarvon. Convulsions cause more deaths in England and Wales, generally, than either fevers or bowel complaints, and almost as many as scarlatina, measles, smallpox, and hooping-cough put together; though the sphere of convulsions is

confined, in this calculation, to children under five years of age. The great anomaly, however, is in the town of Carnarvon. This is apparently a well situated and healthy town. Its general health being shown by statistics to be somewhat better, upon the whole, than that of England and Wales. And yet, in respect to the convulsive or nervous diseases of children, the returns from this town are most astonishing. Out of 1,000 deaths in each sex, this cause of death stands: in London, for 76 males and 61 females; in the northwestern counties, for 128 males, 106 females; in Yorkshire, for 148 males, 121 females; in Manchester, for 130 males, 107 females; in Liverpool, for 99 males, 85 females; but in Carnarvon, for 240 males and 220 females. Why children should die in Carnarvon of hydrocephalus, convulsions, and teething, at such a rate, appears to Dr. Moore truly an enigma.

"The maladies in question," he remarks, "are found usually more fatal in manufacturing than in agricultural districts—a circumstance very intelligible. Carnarvon is neither a densely populated, nor a high pressure manufacturing town; and even if its atmosphere should be otherwise than salubrious, which I should not think it was, it is hard to imagine any condition of climate which would necessarily throw children into fits. Dr. Greenhow tries to explain this anomalous mortality by the theory of race; and as he thinks that, Monmouthshire, and the Welsh counties generally, presenting rather a high mortality in other disorders of a character analogous to this, possibly Celtic blood may have something to do with the matter. The conjecture is an ingenious one, and, considering the known temperament of the Welsh, even plausible; but, unfortunately, it is completely upset by the fact that the two counties where the mortality under this head is lowest, happen to be peopled from a Celtic stock also, viz: Cornwall and Cumberland. This, however, though so striking an anomaly, is only one out of the many supplied by the statistics before us, and for the solution of which all the patience and acuteness of sanitary philosophers will be required."

Dr. W. Williams doubts the correctness of the returns from Carnarvon, the term convulsions being used with a very loose acceptation, in reference to the diseases of children by the apothecaries and irregular practitioners of that town. A gentleman conversant with the social condition of the people of Carnarvon, and of Wales generally, explains the excessive mortality from affections of the head in children, from the fact that the mothers in Carnarvon, in order that they may be enabled to pursue, with as little interruption as possible, their several avocations, are in the habit of giving their children *opiates*, made up in sweetmeats and similar palatable forms. Within the last few years, cases of infanticide, growing out of this practice, have been greatly on the increase in the town.

The nervous diseases of infants furnish striking evidence of the mischief inflicted by unfavourable kinds of labour. The fatality from these diseases is, therefore, as might be anticipated, very variable in different districts.

"In Buckinghamshire, Cumberland, and Herefordshire, these diseases do not cause one death for every 1000 of the population. In the West Riding of Yorkshire, they are three times as fatal. The '*prima origo mali*' is traced to factory labour. Parents living in a vitiated, noxious atmosphere, become feeble and anæmic; the offspring partakes of the same weakly state of constitution, and is early carried off by disease. The fatality does not prove the entire mischief —for wherever a profuse infantile mortality prevails, the remaining children are inferior to the average, which beget a deteriorated race. This is a point of more moment, and of more pressing interest, than even the endeavour to stem the mortality, the result of epidemic disease, in the prime of life.

"Under acute non-infectious diseases, Mr. Simon includes convulsive or nervous diseases, diarrhœa, and respiratory inflammations, as regards their endemic prevalence among young children. These diseases are peculiarly obnoxious to large manufacturing towns and districts. We all must admit that sudden vicissitudes of temperature induce pulmonary and bronchial diseases generally, and that improper food produces diarrhœa. But Mr. Simon naturally inquires, 'why should the death rates vary as they do in different districts of the country? Thus, the death rates in three of the healthiest country districts of England from these diseases are 925; in the unhealthiest district it is 6895! Why are non-infectious infantile diseases seven times as fatal in one district as

in another?' In reply to this question, he considers the complaints separately: 1st, nervous disorders of early life killed in nine years, from 1848 to 1856, 330.881 young persons, or 37,000 annually. The average mortality is 2½ times as high throughout the northwestern counties as throughout the eastern, south-eastern, and south-midland districts. Two thirds of these deaths are registered as by convulsions. The foul and vitiated state of the atmosphere has been the assigned cause of this evil; the mortality in the Dublin Lying-in Hospital having been wonderfully reduced by more efficient ventilation of the wards. 2. The death rate among infants from non-tubercular diseases, almost exclusively inflammations of the respiratory organs, is very large, 28,763 infants having died of pneumonia, bronchitis, and croup, in 1856. The diseases seem also attributable, in a great measure, to the inhalation of impure air; the children who are freely exposed to the air in rural districts being comparatively exempt, whilst those who are 'cooped up' in close rooms, as in towns, readily fall victims to such poisonous influences. 3. Diarrhœa and dysentery annually extinguish the lives of more than 11,000 infants under five years of age—the causes of these diseases are to be found in bad food, deficient sewerage and ventilation; here, also, the death rates vary from 76 to 1779. The gross mortality among young children is referred by Mr. Simon to the varying prevalence of two local causes—1st. To difference of degree in common sanitary defects of residence. 2dly. To occupational differences amongst the inhabitants, there being certain large towns where the homes are badly kept, and the children but little looked after. The varying mortality from smallpox in the different towns in England shows that vaccination is not yet very satisfactorily carried out. In Eaststonehouse, we find the deaths in 100,000 from this pestilence number 146; in Plymouth 134; Penzance 105; while in Birmingham and Manchester, the numbers are only 37 and 26 respectively in 100,000. Thus we find the mortality from this source four times as great in one town as in another. To foreign countries who have learned vaccination from us, it must seem anomalous that we still lose four or five thousand annually by this disease; and a recent report of the Registrar-General shows a curious illustration of slow social progress, that in certain districts in England, during the three months ending 31st March, 1858, sixty years after Jenner's discovery, deaths from smallpox amounted to a fourth part of the entire district."

In view of the very great liability of infants and young children to disease—the causes to which this liability is mainly attributable—and the frightful amount of mortality incident to the earlier ages of existence, the question of prevention is one within the province of an enlightened hygiene, public, domestic, and personal. A special question, however, of some importance presents itself in reference to the influence that may be exercised by the establishment of hospitals, especially appropriated to the treatment of the diseases of children, in the prevention of some portion of the excessive mortality produced by these diseases.

Of the very great value of well-constructed, properly located, and correctly managed hospitals for children, we believe that scarcely any difference of opinion will be found to exist. That they are calculated to save many lives, which without them would most certainly be lost, we have incontestable evidence. But, it may be asked, may not the maladies of children be equally well treated in the wards of a general hospital as in one devoted to them especially? To this question, experience has proved that the reply must be in the negative. The treatment of the diseases of children in the same institutions into which adult patients are also admitted, has often been tried, but has been found invariably to be attended with serious inconvenience. The special requirements and attention demanded for the proper and successful management of the maladies of young children, would seem to be altogether incompatible with the arrangements, duties, and working of a large general hospital. "Such," at least, as Dr. Moore remarks, "is the experience of physicians of eminence in London and elsewhere, where such a combined system has been attempted."

"In default of internal accommodation for sick children in the wards of a special hospital, the next step in a right direction has been the establishment of dispensaries for their special extern treatment. These institutions, at best

imperfect, at the same time conduce very materially to the alleviation of disease, particularly in the infantile stage, as well as a means of affording to students an opportunity of acquiring a practical acquaintance with diseases of early life, and also of affording instruction to mothers and nurses, as regards well-directed hygienic requirements. Of course the deficiencies of such instructions are self-evident, viz., in alleviating those maladies for which the surveillance of the physician, and careful tending of experienced nurses, are so indispensable, and also of affording that intimate knowledge of the nature and treatment of children's diseases, which can only be acquired at the bedside of the patient—information which must react beneficially on all grades of society."

Among the objections to the treatment of the diseases of children in the dwellings of the poor and improvident classes, are to be ranked, not only the general want of proper accommodations and attendance, and the difficulty there is always experienced of enforcing an appropriate diet and regimen, but the important fact that the little patient, while he continues an inmate of his parents' domicile, continues, in very many cases, to be there subjected to the same morbid influences which, in fact, produced the disease under which he labours—dampness, filth, undue cold or heat, and a foul and stagnant atmosphere. Without a removal of the patient from out these deleterious agencies, it can scarcely be expected that even the best directed treatment will be successful in the arrest of the fatal progress of his case.

Dr. Moore furnishes us with statistics which show very clearly the advantages of children's hospitals—when well planned, well located, well constructed, and well conducted—by the greatly diminished mortality among the patients treated in their wards, compared with that which occurs among sick children when treated in the homes of their parents.

"We have already seen," he remarks, "that the mortality of children in London, up to their tenth year, is about 35 per cent., and the mortality in the Children's Hospital averages 14 per cent. This, though not a very low mortality, yet is a very favourable contrast. In Manchester, where the computation is, that 55 per cent. of children die before they reach the age of five years, the mortality, according to the last report of the Children's Hospital, was at the rate of $13\frac{3}{5}$ per cent. But looking at the returns of the continental institutions, we find that in Vienna, taking a mean average of eighteen years, the deaths of children of all classes amount to 60 per cent., and the average mortality of the Children's Hospital about $24\frac{1}{2}$ per cent., these percentages are appallingly high; even the mortality in the adult hospitals in Vienna ranges as high as 14 per cent., equal to that of the London Children's Hospital. Over all Austria the computation is, that 26 per cent. of children born die in their first year, and 37 per cent. within the first four years.

"In Paris, in 1820, 1441, or nearly 33 per cent., perished in the first two years of infancy; in the fifteen years previous to 1831, the average deaths of all children born were upwards of 18 per cent. within the first year, and 28 per cent. before the completion of the fourth year of existence. For a long average of years $19\frac{1}{4}$ per cent. has been the average mortality in the great hospital for sick children in Paris.

"Casper, the eminent statistician, has informed us that in Berlin, in an average of forty years, up to 1822, of all children born there, 52 per cent. died in the first year; while during the war, in the early part of the present century, 71 per cent. perished. An average of years shows that the mortality of the Hospital for Sick Children in Berlin was only about 11 per cent.

"Of 1066 children, under seven years of age, in the hospital at Milan in 1855, the deaths were 168, or 15.76 per cent.; of youths from eight to fifteen years, 2095 were treated, and the deaths were 154, 7.35 per cent." D. F. C.

ART. XXV.—*On Gastro-Colic Fistula. A Collection of Cases and Observations on its Pathology, Diagnosis, etc.* By CHARLES MURCHISON, M. D., M. R. C. P., Assistant Physician to King's College Hospital, London, and to the London Fever Hospital, etc. etc. Printed from the Edinburgh Medical Journal for July and August, 1857. Edinburgh, 1858. 8vo. pp. 36.

IN this most interesting essay, Dr. Murchison has, with great industry, brought together and carefully collated all the facts to be found upon record, and derivable from every other accessible source, in respect to gastro-colic fistula, with the view of deducing some general conclusions as to its causes, character, symptoms and results.

With the exception of such of the intestinal fistulæ as occur in the neighbourhood of the anal orifice, the morbid communications which are liable to be formed between different portions of the digestive canal, between it and some one or other of the natural cavities or with the external surface, have received comparatively little attention on the part of medical observers. Though not of very frequent occurrence, still there is not any portion of the digestive canal from the mouth to the anus, in which such fistulous communications may not take place. Some in situations and under circumstancess which render their presence sufficiently evident at first sight, while the existence of others is to be detected only by the occurrence in the patient of a certain concourse of symptoms—and even these symptoms are liable to mislead, inasmuch as they are not singly nor collectively restricted to intestinal fistulæ, but are liable to be induced by other and very dissimilar causes.

After noticing the several supra and infra diaphragmatic intestinal fistulæ liable to take place, with a reference to the cases of such found upon record, Dr. M. takes up the subject of gastro-colic fistula, or that between the stomach and transverse arch of the colon—the histories of thirty-three cases of which he has found recorded by various writers, or have been communicated to him by professional friends. The conclusions which he believes may be legitimately drawn from these cases, in regard to the pathology, diagnosis, and prognosis of the fistula in question may be thus briefly stated:—

1. As to the *mode of origin* of gastro-colic fistula, it would seem to be in the great majority of cases one of the sequelæ of simple or cancerous ulceration of the stomach. Thus out of the thirty-three cases collected by the author, *twenty-one* were from cancer, and *nine or ten*, probably, from simple ulceration.

This greater rarity of gastro-colic fistula as a consequence of simple ulcer, it is supposed by Dr. M. may depend on three causes, viz.: the fact that simple ulcer is much more rarely met with in that part of the stomach nearest the colon—the great curvature—and that there is a greater tendency in cancer to contract adhesions to neighbouring parts before perforation, while, at the same time, the cementing matter is of a less permanent quality than the lymph thrown out in the vicinity of a simple ulcer.

It is possible that the cancerous and simple ulcer productive of gastro-colic fistula may not always commence in the stomach but occasionally in the colon.

In two cases Dr. M. is of opinion that the lesion was produced by an abscess of the abdominal cavity, bursting into both the stomach and bowels. He considers it also probable that a gastro-colic fistula may result from the softening of tubercular matter cementing together the stomach and colon, in the same way as a fistula may be sometimes formed between the œsophagus and one of the bronchi.

In eighteen of the thirty-three cases of gastro-colic fistula collected by Dr. M. the stomach and colon are noted as intimately adherent; in seven the closeness of adhesion is doubtful; but in eight cases mention is made of a cavity of greater or less extent existing between the two. In three of these eight cases the cavity appears to have been hollowed out of a cancerous mass, that possibly had its origin external to both stomach and colon—in the retroperitoneal glands. In one case the intervening cavity was a scrofulous abscess. In one case the

original disease was a simple ulcer of the stomach, this opened into the lesser sac of the peritoneum, producing a limited abscess, which ultimately burst into the colon; in a similar manner, in another case, ulceration of the colon probably gave rise to the formation of the cavity. In one case the cavity was the pelvis of the kidney, and in another an abdominal abscess.

In three of the cases, besides the opening between the stomach and colon, there also passed from this cavity a fistulous opening through the abdominal parietes. In one case this opening seems to have existed previously to the opening into the colon.

Out of twenty-five cases in which the situation of the opening was noted, in eleven it was at or near the pylorus; in ten in the great curvature; and in four at or near the fundus. In two of the cases, in which the opening was situated in the great curvature, there was also ulceration in the neighbourhood of the pylorus, so that the cases in which the pylorus may be said to have been free from disease, were twelve in number.

The size of the opening in the stomach varied, in different cases, from half an inch to several inches in diameter. In one case, although the opening in the stomach was large, that in the colon merely admitted a crow quill. In three cases the opening was divided into two by a slip of mucous membrane; and, in one of these cases, in such a way that each segment of the colon corresponded to one of the divisions, so that the only communication between the two segments was through the stomach.

In four cases the stomach is noted as small and contracted; and in two, the small intestines as contracted or empty, as also in one the ascending colon; at the same time, in four of the cases the descending colon is described as dilated, or containing feces. In one case the cæcum and ascending colon were much distended, but in this instance there was a stricture of the arch, immediately to the left of the fistula.

The symptoms and diagnosis of gastro-colic fistula will be readily understood from the following general propositions, as given by Dr. M.

"1. We have, in the first place, almost invariably, the symptoms of either cancer or perforating ulcer of the stomach for a greater or less period.

"2. Then we have symptoms, more or less marked, indicating the formation of the opening"—[Pain, diarrhœa, sickness, urgent vomiting, a sensation of something having burst in the belly, irregular intermittent pulse, rigors, great prostration, etc., all or some of which may be present, but not in every case].

"3. When the opening is fairly established, there is very generally vomiting of feces.

"4. Fecal vomiting, supervening upon the symptoms of cancer or perforating ulcer of the stomach, would render the diagnosis tolerably certain.

"5. Where fecal vomiting is absent, there will be the greater probability of our finding lienteria, and this, with the other symptoms and signs enumerated, would in general leave little doubt as to the nature of the case.

"6. When there is lienteria, without fecal vomiting, there will probably be found disease of, or near to, the pylorus, or a very large fistulous communication.

"7. In a case with neither lienteria nor fecal vomiting (which probably will never occur, except the communicating aperture be very small), it is unlikely that the lesion would be suspected; but even then its existence might be guessed from observing a greatly increased rapidity of emaciation, and a relief from previously existing pain, combined with the results to be derived from coloured enemata and percussion." [The former, in cases of gastro-colic fistula, enter the stomach and are vomited; the latter, in many cases, yields a tympanitic sound.]

The prognosis, in all cases of gastro-colic fistula, is unfavourable. Nevertheless, patients may live for a considerable period after the formation of the fistula. In eleven of the recorded cases, the patients lived 1½, 6, 10, 21, and 48 days, 2, 3, 6, and 7 months, and one 2¼ years. In this last case, the patient went about, and followed his occupation as a clerk, until within three months of his death. In this case the pyloric opening was free. Pyloric obstruction with great lienteria always renders the prognosis more unfavourable. D. F. C.

ART. XXVI.—*Woman: Her Diseases and Remedies. A Series of Letters to his Class.* By CHARLES D. MEIGS, M. D., Professor of Midwifery and the Diseases of Woman in the Jefferson Medical College at Philadelphia, etc. etc. Fourth edition, revised and enlarged. Blanchard & Lea: Philadelphia, 1859. 8vo. pp. 706.

IN this fourth edition of a most popular work, the author professes to have introduced many things formerly omitted, and erased others that he considered no longer needful to remain, while he has "endeavoured so to improve the style and recast many portions of the work as to make it more useful and more pleasing to the reader."

Whatever estimate may be placed upon the pathological views entertained by Dr. Meigs in respect to certain of the maladies incident to the female sex, or upon the method of cure laid down by him for some few of these maladies, and whatever exceptions may be taken to the style in which his teachings are couched, the work before us, taking it as a whole, must nevertheless be received as one of sterling merit—well adapted to communicate clear views of the causes, and nature, and management of the maladies of which it treats, and in a manner to impress these views with distinctness upon the mind and memory of the reader.

The leading characteristics of Dr. Meigs' medical writings are their originality —their clearness, and the earnest, positive, and somewhat quaint style in which they are composed. These characteristics are very prominently evinced in the volume before us. Dr. Meigs is, perhaps, more tenacious than almost any other contemporary medical author of equal eminence in a strict adherence to the opinions he has once uttered, the practical precepts he has once emitted, and even the modes of expression he has once adopted, however much their correctness may be controverted and disproved, yet in each new edition of the work under notice we find throughout substantial improvements, bringing the author's teachings in closer approximation with the progress of medical observations and discoveries, and ridding his language of some of the peculiarities which marred its beauty without adding in any degree to its force. D. F. C.

ART. XXVII.—*Elements of Medicine: A Compendious View of Pathology and Therapeutics; or the History and Treatment of Diseases.* By SAMUEL HENRY DICKSON, M. D., LL. D., Professor of the Practice of Physic in Jefferson Medical College, Philadelphia, etc. etc. Second edition, revised. Blanchard & Lea: Philadelphia, 1859. 8vo. pp. 760.

IN this second edition of the very admirable compendium of Dr. Dickson, while the general features and plan of the first edition remain intact—while the same clear and sensible views of the nature, and phenomena, and treatment of disease are taught, and in the same luminous and beautiful style, almost every portion of the work evinces the care which has been exercised by the author in its thorough revision, with the view to the correction of errors and the supplying of deficiencies.

Although restricted to the elements of medicine—professing to present simply a compendious view of the history and management of diseases—the practitioner and student will find it to be both a useful and safe guide to a knowledge of the leading outlines of the principles and practice of the healing art.

Its careful study cannot fail to lay an excellent foundation for the more extended investigation of pathology and therapeutics. In every point of view the work of Dr. Dickson commends itself to those for whose use it was primarily and mainly prepared—to such as have engaged in the study of medicine—to physicians who have recently assumed the responsibilities of practice, and, finally, to public and private medical instructors, to facilitate these in their task of communicating to their pupils that knowledge they are earnestly seeking to acquire.

D. F. C.

Art. XXVIII.—*On the Frequency, Importance and Treatment of Ulcerations of the Os and Cervix Uteri.* By D. McRuer, M. D. Bangor, Maine, 1859. 8vo. pp. 46.

In this pamphlet Dr. McRuer enters into an examination of the merits of the modern doctrines in regard to the frequency, importance, pathology, and treatment of abrasions, excoriations, and ulcerations of the mouth and neck of the uterus.

When we examine all that has been written on this subject during the last ten years, and find, on the one hand, authors of unquestionable authority contending that disease of the os and cervix uteri is of extreme frequency, and that to it may be referred almost all the morbid sensations and conditions which occur in the female from puberty upwards, while, on the other hand, writers of equal weight and eminence insist that disease of the neck of the womb is of comparatively rare occurrence, and when present, that it is an affection attended, most commonly, with no other than local symptoms, and these of no decided prominence, while the general system is implicated only when the morbid condition of the uterus is very extensive, has been of long duration, or is of a malignant character—we can only reconcile this striking discrepancy—this direct opposition of opinion, upon the supposition that the same terms are made use of by the supporters of the two positions in very different senses. In no other manner can the remarkable discordance in their respective statements be accounted for, consistent with the supposition that they both deal in facts, based on observations in the truth of which they honestly believe. For it is to be recollected that they both predicate their opinions upon the results of actual observations made by them by means of the metroscope.

Notwithstanding, however, the different and dissimilar views entertained by recent writers in respect to the frequency and importance of ulceration of the os and cervix uteri, Dr. McRuer believes that a calm and unprejudiced observer may still be able to glean from the conflicting testimony advanced, some important pathological hints, and valuable therapeutical indications. Thus, from Dr. Bennet's admissions he considers we are warranted in inferring the two following important facts in opposition to his theory: namely, the trivial character of his so-called ulcerations; and their dependence upon constitutional and other maladies.

That simple ulceration of the uterus cannot be so formidable a malady as it is maintained to be by certain writers, Dr. McR. infers from the following facts:—

"In cases of procidentia, it is not uncommon to see the os and cervix honeycombed, as it were, with deep, ragged ulcerations, and it may be remarked here that all authorities who have written on this displacement admit that when the parts are returned to, and kept in, their natural position, and the patients observe a recumbent posture, with the occasional use of mild astringent washes, these really true *local* ulcers usually become soon cicatrized, and regain a perfectly healthful condition, without resorting either to the speculum or to the caustic."

From the facts and considerations adduced in the essay before us, Dr. McR. believes the conclusion to be almost irresistible that an affection which exists under every variety of symptom, some contradictory to such as usually attend upon ulceration in other parts, and even in the same parts, and at times giving rise to no symptoms whatever, must be rather a concomitant of various primary affections than a disease *per se*, and that it does not constitute a morbid centre from which irritations radiate to disturb and affect distant organs.

Dr. McR. believes that from constitutional disturbance, the secretions of the mucous membrane of the uterus, and especially from the glandular portion of the neck, become vitiated in character, and by their corrosive properties, irritate the surfaces with which they come in contact, producing those excoriations which are oftentimes attendant upon similar affections in other parts of the body; on the cheek from epiphora; on the nares and upper lip from coryza; on the glans penis from blennorrhagia; and on the rectum of children from mucous diarrhœa.

"In regard to the therapeutics laid down by both parties in this controversy, as the most judicious in cases of chronic leucorrhœa, attended or not attended by local lesions of the cervix, there is," Dr. McR. remarks, "no great difference of opinion, except so far as a resort to *destructive* cauterization is concerned, and the necessary and repeated introduction of the speculum; for it is agreed by all parties that absolute rest of the parts concerned is essential to their return to a normal state; consequently, all mechanical irritations arising from sexual congress, or sudden, violent, or prolonged movements of the body, ought to be avoided. It is neglect of this single requirement that, more than anything else, has prevented recoveries in the early stages of leucorrhœa, before any local abrasion whatever had manifested itself. Cleanliness of the vaginal passage, maintained by emollient and cooling washes, giving to them an astringency when the profuseness or liquid character of the discharges seems to require it, is another of the means which are recognized by the experience of all practitioners as requisite in the successful treatment of these affections. Attention to the general health is another important *sine qua non* in the treatment of lesions of the os and cervix uteri, or even of the vaginal passage. All causes tending to divert or confine the circulation to the pelvic viscera ought to be avoided and removed, such as long continued standing or sitting, as such positions favour gravitative congestions in the parts concerned, and consequently the vessels ought to be often relieved, by occasionally adopting a horizontal position for a short time during the day. Constipation, or the lodgment of hardened feces in the rectum, prominently comes within this category; but the measures used to remove this cause of congestion ought not to be such as to leave behind their operation an irritability equally as far removed from health as the congestion which they are designed to relieve. All drastic purgatives, therefore, especially those containing aloes, should be prohibited, and the necessary soluble condition of the bowels secured by attention to diet, the occasional use of tepid water injections or the mildest laxatives, and the strength sustained by a judicious selection of tonics, and as generous a diet as the patient can assimilate."

"A persistence for two or three months in a treatment embracing the principles just adverted to, choosing such particular remedies to fulfil the required indications as each individual case may seem to demand, modifying the persistence or activity of the treatment conformably with the constitutional idiosyncrasies of the patient, all of which cannot be precisely defined, but must be left to the judgment and discrimination of the attending physician, will, in most cases, remove the malady. But should the symptoms attendant upon chronic leucorrhœa persist in despite of the treatment thus laid down, then a resort to stronger local applications may be proper, from the supposition that local abrasions may complicate the case. Injections *per vaginam* of solutions of sulph. zinci, or decoctions of oak or Peruvian bark, daily used after the tepid water *washings*, or a solution of nit. argent. of the strength of gr. vj to xij, to ℥j of distilled water, may be advantageously substituted once a week, it being not the destructive, but the *antiphlogistic* or *vital modifying* effect of this agent that is required in such cases, as has been so admirably described and enforced both by M. Andral and Prof. Meigs."

From the facts and arguments he has adduced, Dr. McR. feels warranted in presenting the following propositions as those fully substantiated by the testimony of the most eminent observers in different parts of the world, and corroborated by legitimate deductions derived from the application of well-established principles in physiology and pathology to the phenomena connected with the diseased condition in question.

"1. That 'ulceration' is a lesion presenting an excavation or solution of continuity, produced by a molecular death, the lifeless elements being absorbed back into the circulation through the action of the absorbents, and is generally the result of a constitutional cause; while abrasions and excoriations are produced either by mechanical or chemical agents—by the attrition of foreign bodies, or the escharotic effects of morbid secretions, usually the product of other parts, and coming in contact with the ulcerated surface.

"2. That while abrasions or excoriations are of frequent occurrence on the cervix uteri, especially in the pregnant female, ulceration rarely exists on this

part, excepting from *mechanical* or *specific causes;* and that all of these lesions, when not of especial character, are of themselves of trivial importance, only demanding by their complication with other more important diseases, the serious attention of the medical practitioner.

"3. That the demonstrative use of the speculum, or the direct application of caustics, is seldom justifiable or required in the diagnosis or treatment of diseases of the cervix uteri; for that tactile demonstration is more to be relied upon than specular examination, and that the application of caustic agents for the cure of simple lesions ought never to be made *destructive*, but only to produce a modification of the molecular action of the parts diseased, and that this can be done by carefully using solutions of a strength sufficient to produce the latter effect on a denuded surface, without the possibility of endangering the adjoining healthy parts whose epithelial covering has not been destroyed.

"*Finally:* that as abrasions, excoriations, and ulcerations of the cervix uteri, are, in a great majority of cases, the results of constitutional disease, or functional derangement, therefore the treatment of these lesions to be permanently successful, must be principally directed to the general vitiation, or the physiological disturbance; and that to pronounce the local affection a disease *per se*, is to encourage a practice, which, while it does not remove the organic evil, subjects the patients to a greater injury by doing violence to their moral sensibilities." D. F. C.

ART. XXIX.—*The Hymen.* An Essay delivered by appointment before the New York Medical Union. By T. GAILLARD THOMAS, M. D. New York, 1859.

THIS is a highly interesting essay on a subject which, though intrinsically of little moment, has, nevertheless, been invested with a singular degree of importance, in consequence of the mistakes which have been made, and the disputes which have thence arisen in respect to it.

The history of the hymen, as Dr. Thomas has very correctly remarked, presents one of the most remarkable instances of the direct contradiction of authorities in regard to what, at a first glance, we should certainly suppose could admit of neither doubt nor diversity of opinion.

For a long period the presence of the hymen was relied upon as the essential seal of virginity, and its absence as a necessary and positive indication of the fact that sexual congress had taken place; the life, the honour, and the holiest affections of the female heart being jeoparded by these false assumptions. On the other hand, the very existence of anything answering to the hymen has been most positively denied, excepting as an abnormal condition of the female vagina.

Happily, while the results of modern investigations have proved that, as a general rule, there can be no doubt of the existence of a hymen in the virgin state, they also show that it is, nevertheless, often congenitally absent, and that it may be frequently destroyed during infancy and childhood by various accidental causes. Consequently, its mere absence can no longer be admitted as a conclusive proof that sexual intercourse has taken place, nor its presence as a certain sign of virginity. The persistence of a hymen after copulation, and even after the occurrence of conception, has been shown to be the case in very many well-authenticated cases.

All the facts connected with the literature of the hymen, its anatomy and physiology, its medico-legal relations and its diseases, have been collected with no little industry by Dr. Thomas, and will be found clearly and accurately detailed in the essay before us. D. F. C.

ART. XXX.—*On Cough: its Causes, Varieties, and Treatment; with some practical Remarks on the Use of the Stethoscope as an aid to Diagnosis.* By ROBERT HUNTER SEMPLE, M. D., Member of the Royal College of Physicians of London, Physician to the Northern Dispensary, etc. etc. London, 1858. 12mo. pp. 174.

ALTHOUGH we have no particular fault to find with the views, generally speaking—physiological, pathological, or therapeutical—advanced in the work of Dr. Semple, still we are compelled to pronounce it to be one calculated to benefit very little, if at all, either the student or the practitioner. It certainly supplies no want in our medical literature; advances nothing new on either of the topics embraced in it; teaches, in fact, nothing but what is much better taught in any one of our leading systematic works of the practice of medicine.

Cough can be considered, with propriety, in no other light than as a mere effect of some irritation affecting, either directly or indirectly, the organs of respiration, and which can be arrested only by the removal of the latter. It is impossible to erect it into a disease of itself, nor can it scarcely be considered in any case, if it be not perhaps in the single one of hooping-cough, as in a strict sense pathognomonic.

As questions in general pathology, the cause and character of cough, and the pathological indications to be derived from it, are, of course, important subjects of inquiry; but it is not exactly in this point of view that the subject is treated of by Dr. Semple. Under the head of pathology and treatment of cough he enters into a brief consideration of the pathology and treatment of the more prominent of the diseases of which it forms a leading symptom. A consideration far too brief to present anything like a full and useful exhibition of the present state of our knowledge in relation to these affections, or to lead to the formation of a satisfactory diagnosis, or to the eduction of correct indications for their management.

As a general proposition, it is unquestionably true, that the only means by which a removal of cough can in any case be effected is the cure of the existing morbid conditions of the respiratory or other organs by which it is produced or kept up. Still, it may undoubtedly be allayed—that is, the violence and duration of its paroxysms may be reduced, and the intervals between them increased—by remedies which differ somewhat from each other in different cases. But although this fact is to be kept constantly in mind when we have under care any of the diseases of which cough is a troublesome symptom, still the employment of remedies expressly to allay cough, and the good derived from their use, are to be viewed as of secondary importance to a proper treatment adapted for the arrest of the malady with which the cough is associated. To consider the palliatives of any given symptom separately from the therapeutic management of the disease itself to which that symptom appertains is scarcely possible; but, even were it attended with no difficulty, it can serve no good purpose. This is especially true in respect to cough, the causes of which are numerous and diverse, and the principles upon which its treatment is to be based are in different cases dissimilar, and even opposite. D. F. C.

ART. XXXI.—*New Surgical Treatment for Malformation of the Urinary Bladder.* By DANIEL AYRES, M. D., LL.D., Surgeon to the Long Island College Hospital, etc. New York, 1859. 8vo. pp. 14.

ONE of the most legitimate and beneficial ministrations of operative surgery is in its efforts to remove or lessen the discomforts and disabilities to which many of those labouring under certain congenital malformations would otherwise all their lives be subject. Among these malformations, exstrophy or extroversion

of the urinary bladder ranks as one of the most hideous and disgusting—Those in whom it exists are repulsive to their associates under all circumstances, and, unless born in affluent circumstances, become literally outcasts from society.

In different cases of exstrophy of the bladder, the nature, extent, and, to a certain degree, the character of the malformation very materially differ. The greatest variations among these cases arise from the more or less imperfect development, malposition, or entire absence of different portions of the genital organs, in both sexes.

It has never been the good fortune heretofore of any one to execute or devise an operation adapted to remove in even the simplest case of exstrophy of the bladder, the existing deformity, or to remedy to any extent the inconvenience which necessarily results from it.

It is this which renders the case reported by Dr. Ayres one of peculiar interest. It occurred in a female, 28 years of age, who was admitted into the Long Island College Hospital, November 1st, 1858, in consequence of a prolapsus uteri succeeding to parturition, and by an ingeniously devised and skilfully executed operation was effectually relieved of both the malformation of the urinary organs and the displacement of the womb.

On the 20th January, 1859, the patient, we are told, was examined at the hospital, in the presence of a number of medical gentlemen, she having walked a distance of two miles without experiencing any inconvenience. The parts were all found sound and firm, and her general health and spirits much improved. Thus, by a well-devised and executed plastic operation, was remedied a malformation, in respect to which we are assured by Erichsen all former plastic procedures have proved unsuccessful, and even in some instances have terminated in the death of the patient.

Some idea may be formed of the difficulties that had to be overcome in the case described by Dr. Ayres, from a mere statement of the indications that it was necessary to fulfil by the operation. These were—1st. To form an anterior wall for the exposed bladder. 2d. To restore the urinary canal. 3d. To establish the anterior fourchette of the vulva, and 4th. To supply means to prevent the prolapsus of the uterus, and to collect the renal secretions.

For a description of the operation we must refer to the publication before us —it would not be clearly understood without the diagrams by which it is illustrated.

D. F. C.

ART. XXXII.—*A Practical Treatise on the Diseases of Infancy and Childhood.* By T. H. TANNER, M. D., F. L. S., Licentiate of the Royal College of Physicians, late Physician to the Hospital for Women, etc. 12mo. pp. 464. Philadelphia: Lindsay & Blakiston, 1859.

As a manual for the use of the student—as a merely general outline of the etiology, pathology, and therapeutics of the maladies incident to infancy and childhood, the work of Dr. Tanner may be very confidently consulted. It is well adapted to supply the only legitimate purpose for which a manual of any department of science can be required.

With the same faults and imperfections which mark nearly all the works of its class, and liable to the same leading objections to which, almost without exception, they are obnoxious, the work before us can, however, lay claim to a degree of correctness, in which the generality of them are sadly deficient. Although we cannot assent to the correctness of the character claimed for it by its author, of "a complete treatise on the disorders of infants and children, within a moderate compass," we nevertheless admit that, so far as it goes, it is in strict accordance with the views of the most reliable modern authorities on the subjects it embraces.

The fault of Dr. Tanner's treatise is not that it inculcates unsound views in respect to the nature of the diseases of early life, or erroneous directions for

their management, but that it is too concise, general, and sketchy in its descriptions of the phenomena of these affections, in its elucidation of their nature, and in its exposition of their proper treatment. It but barely satisfies the objects for which alone the student should consult its pages, and can afford but little light to guide the practitioner to the knowledge of which he stands most in need at the bedside of the sick infant or young child.

The first one hundred and twenty-seven pages are devoted to general observations on the period of infancy and childhood—the amount of mortality which occurs at these stages of life; the means by which this mortality may be diminished—peculiarities of the infant structure and constitution, and of the diseases which then occur—the medical examination of infants and children—the diagnosis and prognosis of infantile diseases—the therapeutics of infancy, and the management and education of children. The four chapters into which this introductory portion is divided are among the most interesting in the volume before us; they are fuller and more complete than either of the remaining sixteen, that are devoted to the consideration of the individual diseases and accidents incident to the earlier years of existence. D. F. C.

ART. XXXIII.—*A Manual of Elementary Chemistry, Theoretical and Practical.* By GEORGE FOWNES, F. R. S. From the seventh revised and corrected London edition. Edited by ROBERT BRIDGES, M. D. Philadelphia: Blanchard & Lea, 1859. 8vo. pp. 600.

IT is with pleasure that we notice the appearance of a new American edition of this valuable work. The rapid advance made in the science of chemistry renders necessary the frequent revision of elementary treatises on this branch of science, especially such as are intended as guides to the student just commencing his studies. This necessity is apparent, on even a superficial examination of the present in comparison with the last American edition. In the preliminary parts, where physical science is treated, it will be found that the articles on light and electricity have been improved by additions on polarization of light and photography; by description and illustration of Bunsen's battery and the inductive coil of Rhumkorff; in the course of which very interesting modern improvements are presented to our notice. The inorganic portion does not afford any striking addition, the alterations consisting in the producing here and there such observations of fact and theory as may in the interval of publication have been made public, consisting generally of short paragraphs inserted in the text in their appropriate places, without note or comment. Of this character may be noticed remarks on ozone, teroxide of hydrogen; the discoveries of Wohler and Deville on the modifications of silicon and boron, showing their isomeric relations with carbon; the recent observations of the same investigators on strontium, magnesium, alumium, manganese, and chromium, and the improved chemical methods of separating these metals.

It is, however, in the third part, organic chemistry, in which additions are most numerous. Here the preliminary observations are extended by additional notices on the effects of heat and improvements in the modes of applying this agent in organic analysis. The enumeration of the different alterations and additions made to the various groups of organic nature would require a critical analysis for their clear elucidation; but it is sufficient to state that they are of such a character as we would expect from the able editors into whose hands the revision has fallen since the death of the author. It is, perhaps, in the alcoholic series and the artificial organic alkalies, where the most noticeable additions are to be found, and for the exposition of which there are none more competent than the editor (Professor Hoffmann), to whom science owes so much in this respect.

This edition is uniform in appearance and type with the former, differing only in the increased number of pages and illustrations, and may be considered as the most useful text-book for the student of chemistry that has as yet appeared.

QUARTERLY SUMMARY

OF THE

IMPROVEMENTS AND DISCOVERIES

IN THE

MEDICAL SCIENCES.

ANATOMY AND PHYSIOLOGY.

1. *Physiology of the Thymus Gland.*—Dr. Friedleben concludes from his researches on this subject, that the thymus is an organ which, during the growth of the body, ministers to nutrition and blood-development, and therewith to building up of the tissues.—*B. & F. Med. & Chir. Rev.*, from *Die Phys. der Thymus Drüse.*

2. *Practical Deductions from an Experimental Inquiry into the Influence of Food.*—Dr. Edward Smith read an interesting paper on this subject before the Royal Medical and Chirurgical Society, May 10, 1859. In some preliminary remarks the author referred to the large amount of vital action which is necessary to maintain life, and mentioned the various circumstances which he had noted during the continuance of a prolonged fast. He stated that the practice of administering arrowroot, or other fashionable foods consisting of starch, with water, under the impression that it was more nutritious and easier of assimilation than wheat flour, was indefensible, since it did not sustain the vital action to a degree capable of maintaining life, and that nature has not provided starch as food altogether apart from nitrogenous substances. He contrasted the action (or rather want of action) of starch with that of the cereals, and showed that the latter is nearly as great as that of any substances with which we are acquainted. He drew the distinction between an action which increases the existing amount of vital power, and that which only tends to prevent loss of vital power—two circumstances which in practice are commonly confounded; and showed that beef-tea, wines, and brandy can act only in the latter mode, while the cereals act in the first-named manner. Hence, in cases of prolonged exhaustion, where there has long been more waste than supply, the former is not sufficient, and it is essential that the latter be added or substituted.

The action of milk is exceedingly analogous to that of the cereals both in extent and duration, and the combination of the two appears to be the most perfect kind of food. The casein is to the milk what gluten is to bread, and the oil in the milk with substances (respiratory excitants) which call it into action, in a manner quite analogous to the common combination of bread and butter, or of a mixture of fat and lean flesh. The author showed that milk and flesh were the best and most natural modes of administering fat, and altogether preferable to the administration of separated oils. He referred to the frequent use of skimmed milk in Germany as a medicinal agent, and of sour milk in Greece and America as a part of food; and explained the action of the former by its casein and sugar as respiratory excitants; and that of the latter by the advantage of administering lactic and other acids in that combination in the summer season and at other times, when the blood, by tending to undue alkalinity, is

less capable of carrying on the oxidizing process. He showed that in fevers skimmed milk is preferable to new milk.

As fats lessen the respiratory changes, they ought to be, and are, combined with other articles of food which increase them. The author referred to the importance of determining the seasons for the administration of both fat and starch, and showed that there is less difference in the relative amount of these two substances, used in different climates, than has been commonly believed. He attached importance to the physical properties of fat, and explained the beneficial action of that substance when applied to the skin. He thought this latter mode of employing fat to be especially fitted for cases of debility, with lessened appetite and perspiring, soft skin, in which state the waste is always greater than the supply. The beneficial action of sugar was insisted upon; and the love of the French for sugar and water was explained by the refreshing coolness, the innocuousness, and the agreeable flavour of the fresh-made beverage, and the great freedom and lightness of the respiration which attend its action. He thought the ill effects of sugar in the healthy system had been exaggerated. The action of animal substances in increasing the respiratory process, in addition to the supply of plastic material, was dwelt upon, and shown to be of great value to the system. These are allied to gluten, and some of them probably act as ferments; and, in illustration, he especially cited cheese, which promotes assimilation if taken in small quantity, but is apt to disturb it if much is eaten. Tea was shown to cause increased waste, and to excite every function of the body, and hence was well fitted to cases where there was a superfluity of material in the system, or where we otherwise desire to induce a temporary increase in the vital action; but is injurious to those who are under-fed, or in any case where there is greater waste than supply. In illustration, the author cited the increase in the loss of weight in the prisoners at Wakefield when tea was added to their food. The action of tea has been hitherto misunderstood, but the sagacious observation of Liebig as to its analogy with the active principle of the bile was much commended. He (Dr. Smith) recommended its use instead of spirituous liquors by soldiers on march, or otherwise exposed for a lengthened period to great heat; since by its powerful influence in increasing respiration and the action of the skin, without increasing pulsation, it was particularly fitted to counteract the influence of heat in its tendency to induce heat-apoplexy, or, as more suitably termed by Mr. Longmore, "heat-asphyxia;" twenty-five grains of tea in a concentrated cold infusion, taken every hour or half hour during exposure would suffice. For similar reasons, he urgently recommended it as an adjunct in the treatment of suspended animation, as from immersion. It has a rapid and accumulative action, so that the small and repeated doses have much greater effect than larger and more isolated ones. It differs from coffee chiefly by increasing the action of the skin, and thereby tending to cool the body, and therefore the two substances are applicable to different conditions of system. He thought that both, and particularly tea, ought to be more commonly used as medicinal agents. Coffee-leaves he believed to be a valuable febrifuge medicine, and one particularly fitted for cases of nervous excitability.

The author then contrasted the effects of brandy and gin with tea, and showed that in all respects they were directly opposed; but coffee so far resembled them in action, that it lessened the action of the skin, and thereby lessened refrigeration. Rum and beer he regarded as restoratives, and the combination of rum and milk as the best restorative employed as food; while brandy and gin simply lessen waste. He regarded all alcohols as having their chief influence in sustaining the action of the heart, and recommended that they should be given in small quantities, and repeated every quarter of an hour or half hour in urgent cases, so as to accumulate their action, rather than allow reaction to follow each dose by permitting a long interval between the doses. He mentioned a case in which he gave six bottles of port wine in forty-eight hours, with the effect of sustaining the patient's life, and reducing the pulse from 150 to 90 per minute. He believed that alcohol increased the respiratory action indirectly through the nervous system, and that in fine old wines and spirits this action is lessened by the volatile elements, which have a conservative tendency. He

particularly cited the conservative influence of fine old port wine, and the disturbing influence of new and inferior spirits. The primary and secondary action of all alcohols, when taken in an amount to affect the sensorium, was always felt, and the author described the attendant circumstances.

In conclusion, Dr. Smith stated that dislikes for foods are indicative of lessened action, and that other foods of analogous properties should be provided in such cases; and also that it was probable that at least some kinds of azotized substances are more fitted for the hot season, when the chemical changes are greatly reduced, than has been heretofore believed.—*Med. Times and Gazette*, May 21, 1859.

3. *Researches into the Nature of the Involuntary Muscular Tissue of the Urinary Bladder.*—Mr. G. V. Ellis, Professor of Anatomy in University College, London, in a communication read to the Royal Society, endeavours to show that the involuntary muscular tissue of the bladder, and the voluntary muscle in other parts of the human body, have a like composition, and that Prof. Kölliker's view, that involuntary or smooth muscle is made up of fusiform cells, is incorrect. On the contrary, the muscular substance of the bladder is composed of lengthened fibres, with fixed and tendinous terminal attachments. The fasciculi of muscular fibres in the bladder are interwoven into a network, and are marked at varying intervals by tendinous intersections, like those of the rectus abdominis on a small scale.

The author terms what are usually called the "nuclei" of the muscular tissue —"corpuscles," and distinguishes two varieties of them, the oval and the fusiform. The latter are the more numerous, and are the rod-like nuclei of Kölliker. Two or even three of these may be observed in the length of a single fibre. If a single muscular fibre of the bladder is isolated, it will be found to terminate as in voluntary muscle; connective tissue investing not only the fibre, but each of the separate portions into which it ultimately divides.

The author considers that the "sarcous elements" of voluntary muscle are represented by the lines of dots visible in the muscular fibres of the bladder.—*Dublin Hosp. Gaz.*, May 15, 1859, from *Proceedings of the Royal Society.*

MATERIA MEDICA AND PHARMACY.

4. *Hydrochlorate of Ammonia.*—This article, though long esteemed on the continent of Europe as an internal medicine, has been but little used either in Great Britain or in this country. Dr. M. J. Rae, in a recent paper (*Lancet*, Dec. 11, 1858), states that an experience of eight years with it has led him to entertain a high opinion of its curative powers in various diseases.

Dr. R. says he has used it with marked success in goitre. "In several of the cases, where the local application of the muriate was conjoined with its internal administration, the tumours—some of which were very large—rapidly diminished in size, and were soon reduced to the normal condition. It cured the whole of the cases (ten in number) in which it was tried, the period of cure extending from a fortnight to two months. The subjects of treatment were mostly factory girls, of ages varying from fourteen to twenty. To test the powers of the muriate fairly, it was given alone in mucilage, or infusion of quassia, and combined with soap liniment for external use." Dr. R. made a comparative trial of the muriate of ammonia and iodide, and he found the former to act as speedily and effectually as the latter.

Dr. R. also extols this salt as a valuable remedy in hooping-cough. He has tried it in thirty-seven cases, with a most satisfactory result. Of this number two died, both hopeless cases. Two were doubtful, the patients having been removed from town before the cure was completed. "In the thirty-three remaining cases, the majority of which were of more than ordinary severity, the average period of cure was about twenty days. But in most instances,

when the patient was at all favourably placed, and came early under treatment, the disorder yielded in from nine to fifteen days. The remedial influence of the muriate in the disorder is," Dr. R. says, "immediate and decided. Under its use the expectoration soon loses its irritating, glairy character, becoming bland and less tenacious, and the paroxysms are rendered milder, less frequent, and of shorter duration; in fact, by its influence the little patient seems to be carried more easily, quickly, if not at the same time more safely, through the attack than by the agency of any other remedy with which I am acquainted. In most cases the muriate was given in mucilage, or with liquorice water, combined with an aromatic, and in doses of one to five grains, according to the age of the child, and repeated every four or six hours.

"When pneumonic or bronchial complications existed, or were threatened, antimonial or ipecacuanha wine, with morphia or hyoscyamus, were added to the ordinary mixture. The only inconvenience observed to result from the use of the muriate was the occasional supervention of a slight mucous diarrhœa, which was easily checked, and did not interfere with the treatment."

Dr. R. has also found this article useful in enlarged lymphatic glands, in indolent bubo, and in scrofulous ulceration of the lymphatic glands. In several aggravated cases of this sort which have come under his observation, some of which presented a chain of foul, ragged ulcerations extending from ear to ear, the muriate acted with great rapidity; and in some instances, where iodine, syrup of iodide of iron, and other medicines, had no effect, the ulcerations quickly healed under its employment.

"It is also," he asserts, "a very excellent remedy in many forms of cutaneous affections, more especially in the scaly variety. I have seen cases of psoriasis inveterata which had resisted the long-continued use of arsenic, iodine, and other remedies, quickly yield to its influence. It seemed to me to have the most decided effect in those cases of psoriasis occurring in patients of dissipated habits, or when complicated with enlarged liver. It is also very useful in eczema and syphilitic squamæ. Drs. Watson, Ebden, and others, recommend the muriate in tic and facial neuralgia, and it certainly possesses very considerable curative power over these painful affections, and particularly over that form of neuralgia mentioned by Dr. Watson, which is confined chiefly to the lower part of the face, and in a very troublesome variety affecting one or other side of the neck, and probably connected with a morbid condition of the cervical lymphatic glands.

"The muriate, like other remedies in neuralgia, does not succeed in every case; but in those cases in which it proves successful, the beneficial effect generally follows soon after its administration. In my hands the best results were obtained with it in neuralgia when it was given in the ordinary dose, and repeated every half hour or hour."

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5. *Iodide of Sodium.*—Mr. ALEX. URE states (*Lancet*, April 2, 1859) that "iodide of sodium, as a therapeutic agent, is and ought to be more active than iodide of potassium, since it is richer in iodine. According to Gmelin, iodide of sodium contains 84.45 parts of iodine in the hundred, while iodide of potassium contains but 74.27, the proportion of sodium, though small, being still sufficient to cover the irritative quality of its associate.

"As far as my experience goes, iodide of sodium is a blander salt, more assimilable, and better borne by the stomach, than iodide of potassium. It is, moreover, much less prone to produce symptoms of iodic disturbance. Patients under my care have taken it steadily for weeks together, without suffering the slightest inconvenience, and with uniform advantage as regarded the morbid condition. On no occasion, save one, has there been any complaint made of this medicine producing sense of weight or uneasiness referred to the stomach, nausea, impaired appetite and digestion, headache, running from the eyes and nostrils, general nervous depression—symptoms which, at times, supervene during the administration of iodide of potassium even in moderate doses. The instance in question was that of a puny, scrofulous boy, with disease in both knee-joints.

"As a general rule, the preparations of soda are milder in their operation on the system than those of potash. If, moreover, the important view first announced by M. Dumas, in the 92d volume of the *Annales de Chimie*, be

accepted, that there are certain salts which leave the blood the faculty of becoming arterialized, while others deprive it of this property, and that the salts having soda for their base are more proper to maintain this condition of integrity than those of potash or ammonia, it may be fairly assumed that the former are likely to exercise a more favourable remedial influence than the latter, especially if exhibited continuously for a length of time. Soda, variously combined, is diffused extensively throughout the organism; fully five-sixths of the saline constituents of healthy blood consist of salts of this base.

"Iodide of sodium may be prescribed in all cases in which the employment of iodide of potassium is indicated, as antidotal to various constitutional symptoms of syphilis, chiefly of the so-called tertiary group, and where mercury has been properly used beforehand; in certain forms of rheumatism; in chronic affections of the joints and bones of a scrofulous character, particularly where a stealthy inflammatory process has determined copious fibro-plastic deposition or hypertrophy. If judiciously administered, it may be given in progressively increasing doses, where it is desirable to produce a decided alterative effect on the system. M. Gamberini has furnished a brief notice respecting its use in the volume of Schmidt's 'Jahrbücher' for 1858. Reference is made to 116 cases of constitutional syphilis in which it had been exhibited, and where it was found to have acted more rapidly than iodide of potassium, and often proved efficacious where the latter drug had been of little or no avail. It is there recommended to be given as follows: One scruple is to be dissolved in three ounces of distilled water, and this is to be swallowed in divided doses in the course of the day. After the lapse of two or three days, the above amount is to be augmented by the addition of six grains, and so on, until eventually the patient comes to take two drachms, or even more, of the salt daily; the time for taking each dose being an hour before meals.

"Hitherto I have usually prescribed the iodide of sodium to the extent of five or six grains twice or thrice daily, dissolved in four ounces of compound decoction of sarsaparilla, which forms a convenient vehicle; occasionally, in pure water, with the addition of five grains of bicarbonate of soda to each dose; this serves to counteract acescency, and the consequent liberation of hydriodic acid in the stomach, which is sure to cause headache. In scrofulous complaints, I have given it combined with cod-liver oil, and with manifest benefit. A remarkable and unexpected effect was observed in one instance under this treatment for diseased bone, where a marked improvement of sight ensued from diminution of a nebulous condition of the cornea. In constitutional syphilis, I have found it advantageous occasionally to conjoin the use of the iodide with that of bichloride of mercury, should mercury have been previously withheld, or imperfectly introduced into the patient's system.

"As a general rule, the iodide ought to be administered in plenty of liquid, and not on an empty stomach, as suggested by the above writer. It is readily soluble in water, has a cooling, saline taste, certainly preferable to that of the potassium compound, and by no means equally persistent in the throat."

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6. *Ethereal Oil of Horsechestnut as a Local Remedy in Gout and Rheumatism.*—The bark of the horsechestnut, from its containing a bitter principle, forms a tonic medicine which has been classed among the substitutes for quinine; the roasted pulp has been recommended in atonic uterine hemorrhages, and the ethereal oil has been indicated as a topical agent at the commencement of gouty and rheumatic attacks. This oil is obtained from the powder of the horsechestnut by treating it with ether, which takes up the oil, and afterwards evaporating the ether. This oil is employed as a mild inunction on the inflamed part, and when there is great sensibility, the inunction is employed in a circular course round the inflamed part, so as to arrive gradually at the centre. Dr. Masson, who has made numerous experiments with inunctions of the ethereal oil of horse-chestnut as a method of arresting the local symptoms of gout, states that he has remarked an exasperation of the pain during the first half-hour following the application, but that after this period there was manifest relief.—*Bull. Gén. de Thérap.*, Sept. 15, 1858.

7. *Formula for the Combination of Nitrate of Bismuth with Copaiba and Cubebs.*—According to the observations of M. CABY, the nitrate of bismuth combined with the balsam of copaiba and powdered cubebs, possesses the property of neutralizing the irritating effects produced habitually by these medicines on the digestive canal. The formula which is employed at the Hospital of St. Lazare, is a mixture of equal parts, by weight, of balsam of copaiba, powdered cubebs, and nitrate of bismuth, with some essence of peppermint as flavouring ingredient. This combination is said to be supported easily by the most delicate stomachs; there is no excitement, epigastric heat, or diarrhœa, so that the action of the medicines being entirely concentrated upon the genito-urinary passages, the desired results are more rapidly and easily obtained.—*Ibid.*

8. *Best Form to be given to certain Pharmaceutical Preparations intended for External Use.*—In an article in the *Bulletin Gén. de Thérap.* (May 15, 1858), it is remarked that greasy applications to the skin do not possess, in general, any great therapeutical efficacy, and it is therefore suggested that they might be advantageously replaced in many instances by saponaceous compounds. In studying the action of the latter, M. DESCHAMPS composed a soap with iodide of potassium, and rubbed it in four times upon his epigastrium. He analyzed his urine in the intervals of the frictions, and found it to contain appreciable quantities of iodine. He afterwards washed with water the part which had been rubbed with the soap, and he found in the liquid some fatty acids arising from the decomposition of the soap by the fatty acids secreted by the skin, together with iodide of potassium in solution. These washings were continued for five days successively, and every day some iodine and fatty acids were obtained. These facts prove that the skin is easily penetrated by saponaceous compounds; that the skin rejects a part of the principles which it absorbs; and that therapeutical agents may pass through the skin, diffuse themselves in the system, produce physiological effects, and be expelled by the ordinary passages. M. Deschamps has, therefore, proposed to employ certain saponaceous compounds, instead of liniments and pomades, in cases where the surface of the body, to which these preparations are to be applied, is not denuded. These soaps contain respectively iodide of potassium, laudanum, ammonia and laudanum, extract of belladonna, sulphuret of sodium, and digitalis, combined with an alcoholic solution of soap. —*B. & F. Med.-Chirurg. Rev.*, April, 1859.

9. *A New Mode of Preparing Hydrate of Magnesia as an Antidote to Arsenious Acid.*—The hydrate of magnesia having been proved to be superior to peroxide of iron as an antidote to arsenious acid, M. Guérin has proposed a new plan of preparing the former, which consists in substituting ammonia for potash in the precipitation of the magnesia. The sulphate of magnesia is the salt employed. The hydrate of magnesia may be prepared extemporaneously by rapidly dissolving a considerable quantity of sulphate of magnesia in common water, and adding to it some caustic ammonia, until the ammoniacal smell is perceptible; then the whole is to be filtered, the hydrate of magnesia collected, and administered in a state of suspension in water. The superiority of this mode of preparing hydrate of magnesia is said to consist in the entire absence of potash in the preparation; for in the treatment of arsenic poisoning, if any portion of potash should be present, an arsenite of potash would be formed, and the risk of the patient would be increased instead of being diminished.—*B. & F. Med.-Chirurg. Rev.*, Ap., 1859, from *Bull. Gén. de Thérap.*, Aug. 30, 1859.

MEDICAL PATHOLOGY AND THERAPEUTICS, AND PRACTICAL MEDICINE.

10. *Coup de Soleil.*—Dr. WM. PIRRIE, late assistant surgeon to the 71st Highland light infantry, has related (*Lancet*, May 21 and 28, 1859) the results of his

observations of numerous cases of sunstroke, which occurred during Sir Hugh Rose's summer campaign of 1858, in Central India.

The mode of death in all but the rapid form, is evidently, he says, by apnœa, "or at all events the symptoms of apnœa plainly predominate; and hence the name 'heat-asphyxia,' given by some to this most alarming disease. The symptoms are distinctly those of that mode of dying in which death commences in the lungs; but by what means the circulation begins to be arrested in the lungs —or, in other words, the manner in which high temperature operates in causing stagnation of blood in the lungs—whether it be by giving rise to immense engorgement, or by causing imperfect arterialization of the blood—I do not consider myself qualified to give an opinion. * *

"It is quite possible," he further remarks, "that even in the forms of sunstroke in which the respiratory apparatus is primarily affected, there may be some degree of cerebral syncope, even from the commencement; but, although it may be an erroneous impression, the study of such cases produced in my mind the belief, held by many, that death is caused by apnœa, or that the symptoms of that form of death predominate.

"In the forms of sunstroke in which the patient, without any premonitory symptom, falls down insensible, makes a few gasping efforts to breathe, and in a few minutes expires, the symptoms appear very clearly to indicate death beginning in the brain. The sensibility is first destroyed, and, as a necessary consequence, the functions of the lungs are suspended, and circulation of venous blood takes place: circulation of venous blood in this form of dying being the *consequence* of the loss of sensibility; whereas in death by apnœa it is the *cause*. The essential anatomical characters of both modes of death being the same, presenting only differences of degree in the chest and in the head, it is chiefly by the symptoms during life that an opinion can be formed as to whether death was caused by coma or by asphyxia. I am quite aware how speedily sensibility is destroyed in death by opnœa; but many cases of sunstroke produce a strong conviction in the mind of the medical observer, that sensibility ceases first, and that death begins in the brain."

With regard to the treatment, Dr. Pirrie says his testimony may be given in a few words. "In many cases of almost instant death by sunstroke, life was lost before it was possible to institute any mode of treatment; and, in many others, the powers of life were so thoroughly sunk from the moment of seizure that remedies produced no impression on the symptoms. In no case was general bloodletting at all beneficial, but decidedly the reverse. In many instances, I have seen it employed by men of great experience who were well qualified to judge when it was likely to be useful, and the results were always unfavourable; and I have been told by many who had ample means of observation during the summer campaign of 1858, that venesection always seemed to hasten a fatal termination. The result of bloodletting seemed of itself sufficient to show that the vital organs are overpowered by some influence in addition to that of local congestion.

"The treatment most generally useful consisted in removing the patient to the shade as speedily as possible—in preserving the body in a proper position—in the energetic employment of cold affusion to the head—in producing as cool an atmosphere as possible around the patient—in the diligent use of friction and heat to the extremities and other parts, so as to cause derivation from the head and chest—in acting sharply on the liver and bowels by mercurial and other purgatives—in frequently administering diffusible stimuli, and in causing determination to the surface of the chest by applications of mustard or of turpentine. Along with these remedies, local depletion from the head seemed sometimes to be beneficial. When the patient became comatose, blisters to the back of the neck, and stimulating cataplasms to the feet or legs, were tried; but, in too many instances, they were of no avail.

"Another measure, to which Dr. Simpson, of her Majesty's 71st regiment, attached importance, was to engage the patient's attention by keeping him answering questions put to him in a loud tone of voice; to rouse him up by continually talking to him, and by rubbing his limbs; and not to leave him to himself till the remedies should have fair time for their operation. This expe-

dient seemed, in some cases, to assist in warding off the insensibility, if not in some cases to prevent its accession.

"Under the use of the above-mentioned treatment, modified according to circumstances, many patients recovered; but, in too many instances, the result was fatal to those who were attacked with this singular disease."

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11. *Coup de Soleil.*—It appears, from the report of THOS. LONGMORE, Esq., Surgeon to the 19th Regiment, that no less than 16 cases of heat-apoplexy occurred in that regiment, while stationed at Barrackpore, between May 23d and June 14, 1858.

Mr. Longmore specially calls attention to a symptom, important from its constancy and early manifestation—we mean irritability of the bladder. In the case of Lieut.-Colonel S——, "the *first* thing of which he complained was irritability of the bladder. If this symptom should prove to be a general precursor of the attack, it might be rendered valuable as an indication of the approaching danger, which, by early and proper care, might then probably be averted; and its presence at a time when heat-apoplexy was prevalent would make the surgeon alert to obviate the more serious symptoms which might be expected to follow." The doctrine here implied is that of the *local* warning (symptoms) of disease in operation at, perchance, a remote distance in the body, and which, being itself far removed from the scene of its local manifestation, would not *appear* to be the cause of such topical disturbance. This doctrine, in its important relation to diagnosis, is fully enunciated in a work just published.[1] At page 11 of that work, Mr. Gant observes: "Irritability of the bladder, for instance, arising from some morbid condition of the urine, may prove to be the local warning to an individual, which first directs his attention to that condition, itself due to a far more grave disease of the kidneys, the stomach, or the nervous system. Hence the value of many symptoms, which, although themselves comparatively insignificant, may, nevertheless, guide us to discover latent disease in some distant and hitherto unsuspected organ."

Appearances on examination after death.—"In all the cases," Mr. L. says, "much the same appearances were presented as if the patients had died asphyxiated from some cause. Thus, excessive engorgement of the lungs, amounting generally to complete obstruction of the pulmonary circulation, and, in parts, having all the appearance of true interstitial apoplexy, was most remarkable. The cerebral congestion, less marked in character, and less constant in amount, seemed to me *secondary* to the failure of the due performance of the act of respiration, and, perhaps, resulted from loss of tone in the vessels, and from enfeebled action of the heart, consequent upon the imperfectly oxygenized blood it was receiving." In conformity with these post-mortem observations of heat-apoplexy, Mr. Longmore would term this disease "heat-asphyxia;" and the treatment which proved most successful would seem to corroborate this view of its pathology.

Treatment.—"Cold effusion by mussucks of water, poured over the head, chest, and along the spine; counter-irritation by means of mustard poultices to the chest, purgative enemata, and afterwards, when the head remained oppressed, blistering to the nape of the neck." Venesection was not found useful, but topical blood-letting seemed advantageous when there was much fulness of the superficial veins about the head and neck. The duration of the disease presented two extremes. "Of the 7 fatal cases, 1 died in one hour, and 1 in forty-six hours, after the attack."—*Lancet*, March 26, 1859.

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12. *On "Ataxie Locomotrice Progressive."*—DR. DUCHENNE, of Bologne, under the above title, describes what he regards as a new disease. He states that for six years past his researches have induced him to believe in its existence, and that once having satisfied himself of the fact, he had no difficulty in discovering many instances of the disorder. Without making a minute search, he states that in a brief space of time he collected twenty cases. The charac-

[1] The Irritable Bladder; its Causes and Curative Treatment. By Frederick J. Gant, M. R. C. S., Surgeon to the Royal Free Hospital.

teristic features are: progressive abolition of the co-ordination of movements and apparent paralysis, contrasting with the persistent integrity of the muscular forces.

The loss of power of co-ordinating the movements which is manifested in the lower extremities, consists in a difficulty of maintaining an erect position without trembling or without support, or of performing certain movements in progression, such as lateral or gyratory movements. The patients commonly at such time feel giddy and as if about to lose their balance, and sometimes think that their lower extremities have lost power; the tactile sensibility of the sole of the foot becomes blunted or otherwise altered. They soon seem to be walking on soft substances when treading upon a pavement, or the ground appears to be elastic and to jerk them up. Subsequently they are unable to walk without throwing the legs forcibly forwards and striking the ground violently with the heel. These movements are at times so violent and sudden, that the body is shaken at every step, and that the patient loses the balance; this irregularity increases to such an extent as to render standing and walking almost impossible. It is then necessary to support the individual on both sides, and in attempting to make a few steps, their limbs are agitated in the most violent manner, without apparent object; the strength is speedily exhausted by these efforts, and the patient begs to be led back to his arm-chair. In this condition the patients pass their life, sitting or lying down. At the same time, with all these symptoms of paralysis, there is great force in individual movements, as shown by a dynamometer invented by Dr. Duchenne. The inquiry into the state of these movements must be made while the patient is sitting or standing; but it is more convenient to examine the lower extremities in the horizontal posture. The author first causes the patient to perform those movements which he proposes to study, then when the muscles which produce them are in a state of contraction and are maintained so by the patient, he acts upon the extremity of the member in question in the opposite sense to the movement performed, so as to support that part of the limb which serves as the attachment of the contracted muscles. For instance, in measuring the force of the extensors of the leg on the thigh, the patient lying on the opposite side, Dr. Duchenne has the thigh held very firmly at its inferior extremity, and whilst the patient tries to extend his leg forcibly, the Doctor acts upon it in the opposite direction, and applying the force at the level of the ankles, until he has produced flexion of the limbs. This the patient can do without fatigue; the dynamometer determines the force of the movement of extension employed by the individual experimented upon. A drawing of the instrument is annexed, but the exact method of its action is not explained.—*B. and F. Med.-Chirurg. Rev.*, April, 1859, from *Archives Gén. de Méd.*, Dec., 1859.

[A well-marked case of this affection, so graphically described by Dr. Duchenne, has fallen under our observation. The patient was a gentleman about sixty years of age, very robust, and a free liver. The right lower limb was most affected, and he complained that he could never tell when his right foot touched the ground, and locomotion became impossible. When raised up on his feet by the aid of two assistants, in order to enable him to make a few steps from his bed to a chair, his limbs trembled violently—he cried out that he would fall, and all power of supporting himself seemed to leave him. When placed in his chair, he became greatly agitated from the fear of falling, and he could not retain his seat unless a small table was placed before him. This table in reality afforded him but little support, but it always satisfied his mind, and on being placed before him his agitation promptly ceased.—Editor.]

13. *Treatment of Paralysis by the combined Aid of the Continuous Galvanic Current and Localized Galvanism.*—Mr. H. W. Lobb read a paper on this subject before the Harveian Society (March 3, 1859). He divided paralysis primarily into central and peripheric; in the former the disease is seated in the brain or cord, in the latter in the muscles themselves or the nerves supplying them. Localized galvanism affords a most admirable diagnostic of paralysis arising from disease in the cord. Upon its application to the affected muscles, if they readily contract, we know that the cord is healthy; whereas, if they do not con-

tract, the cord or muscles themselves are to blame. In rheumatic paralysis the muscles contract, causing severe pain; whereas in disease of the brain there is no pain upon contraction. The author then proceeded to give the notes of a case of *Rheumatic Paralysis of the Deltoid* of three months' duration, relieved the first day and cured the second. He stated that this was a common affection in both sexes after the fiftieth year, and that it usually easily gives way before the combined application of the continuous and interrupted galvanic currents. This affection was generally the result of cold or damp affecting primarily the cutaneous nerves; these, by reflection, give rise to a secondary injury to the motor nerves, probably setting up an inflammatory condition which, upon subsidence, leaves an inability to move without pain, and, in severe cases, inability to move at all. Friedberg, quoted by Ziemssen, has demonstrated in these affections atrophy of the arteries supplying the part. The author proceeded to the method of treatment, consisting of local Faradisation, together with the aid of the continuous current, the patient wearing a Pulvermacher chain. The next description of paralysis described was from long disuse and loss of muscular fibre, without central disease. *Partial Paralysis of Biceps and Triceps, from Injury and long Disuse.*—Lieutenant C., wounded before Delhi, June, 1857, by a shell, followed by fever and erysipelas. He was totally incapacitated from using the left arm, and had obtained two years' leave on full pay, with a certificate from the Medical Board, doubting his ever regaining the use of his arm. He was afraid, he said, to use the arm, lest he should drop anything, as he had no confidence in it; he was unable to ride on horseback, as he had no control over the animal; could not supinate the arm the least, or bend or straighten it with any power. Looking upon this case as one of paralysis from disuse, not from disease, Mr. Lobb promised him the perfect use of his arm in three weeks. A Pulvermacher chain of forty elements was applied, from the insertion of the deltoid to the outer condyle of the humerus, the position of the wound; direct current to promote circulation, and the interrupted current of the primary wire, was used daily for half an hour, exciting to contraction the paralyzed muscles. After the third day he was able to move his arm normally, although weakly; and at the end of a week he could raise a chair and hold it out at arms' length, and supine the arm with great force. This was a most satisfactory case, and astonished the operator, from the rapidity of the cure, almost as much as the patient. Mr. Lobb then related a case of infantile paralysis, caused by irritation during dentition, which had been under treatment for ten weeks with the most marked success; but, as the case was not complete, it is reserved for a future occasion. The fourth instance was a young lady, partially hemiplegic for seven years, who had undergone various forms of treatment without success; amongst others, she had been operated upon at the Orthopædic Hospital, with no benefit. The lower arm was completely paralyzed with contraction of the flexor muscles of the thumb and fingers. Electro-muscular contractility was speedily set up in all the affected muscles, but voluntary motion was tardy and very gradual; it commenced in the fingers, then the thumb, and lastly the supinators. She had voluntary power in all the paralyzed muscles in the course of six weeks, but the contraction is slow, and evidently the result of great and fatiguing efforts of the will; the muscles are now large and healthy, and with continued voluntary efforts will all return to their allegiance to the brain.—*Med. Times and Gaz.*, March 26, 1859.

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14. *On the Indications for Blood-letting.*—Prof. SKODA, in the course of his clinical lectures, had occasion to make some remarks on the indications for blood-letting, of which the following is the substance: Venesection is only justifiable when, by a reduction of the quantity of the blood, dangerous contingencies, which have a distinct relation to the general mass of the blood, can be thereby removed. Inflammatory disease is of itself no indication, and equally valueless is the so-called nature of the fever—inflammatory, adynamic, etc. The condition of the pulse, as to strength and feebleness, is more the subjective idea of each individual physician, and cannot, therefore, be adopted as a directing indication for venesection. Real or apparent debility is a term conveying no more certain meaning, for the debility may be either muscular, mental, or merely

relates to the senses; while others include in the term diminution of the pulse or of the temperature. The remarkable observation, that the great muscular debility of many febrile diseases is often much lessened by bleeding, and which led to the supposition of a false debility, produced by oppression of the nerves, removable by blood-letting. But this fact is equally explicable by the consideration that muscular debility diminishes with the diminution of the fever, and this is equally striking whether venesection have been used or no. Only, blood-letting is a new loss, which must be added to that already caused by the febrile movement. Many people can withstand the loss of blood better than others; and there can be no doubt that a certain amount of blood may in some produce derangements only to be speedily removed by blood-letting. That, however, is but an individual case, and can no more be elevated to a general rule, than the similar fact that some individuals cannot bear in the smallest doses medicines which in others produce their beneficial effects only in very large ones. Accordingly, we may, in robust individuals, employ blood-letting even to allay certain symptoms not having a distinct connection with the amount of blood; but a favourable result in their case must never induce us to extend the practice to patients already anæmic, and such practice must be carefully avoided in diseases which tend to terminate in anæmia. Loss of blood will be borne well so long as sufficient remains for the nourishment of the organs. The inevitable alteration in the composition of the blood, consisting as it does chiefly in an increase of water, is speedily corrected by the secreting organs. Serious disturbances only present themselves in such as are incapable of replacing the blood lost, or in whom the loss goes on faster than is compatible with due nourishment. Venesections, performed from time to time, are often borne without detriment; how long this may be continued we cannot distinctly say. Blood-letting in acute inflammatory diseases, when not too frequently or too largely practised, have no influence in hastening or retarding the convalescence; this depending solely on the slower or more speedy return of the diseased organ to its normal state. The sole indication for blood-letting is, therefore, the necessity of subduing dangerous symptoms, whose occurrence has a determinate relation to the amount of blood, and exceptionally, in cases where experience has shown that troublesome symptoms may be thereby relieved; but in such cases the individuality of the patient must be carefully kept in mind. Venesection is always to be avoided in feeble persons, and in attacks which are apt to recur (as hysteria and hypochondria).—*Ed. Med. Journ.*, May, 1859, from *Prager Viljschft.* 1859, Bd. i.

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15. *Experiments relative to the Hypodermic Treatment of Disease.*—Mr. Charles Hunter related to the Western Medical and Surgical Society (April 1, 1859) some experiments on this subject, the object of which was to test the value of this plan of treatment, and to compare it with other modes of administering medicine. The author stated that he had in two cases of neuralgia to desist from Dr. Wood's plan, because abscess followed the constant localization; he was therefore induced to try the injection of parts distant from the neuralgic part. He found the greatest benefit follow this plan, and local inflammation was by this means avoided. Cases of neuralgia were cited showing how the injection of the cellular tissue (the tissue Mr. Hunter always injected) of any part would act rapidly upon and cure neuralgia in another part. Experiments were detailed which he had made to see whether these injections acted locally, or by being absorbed before they produced their effect. The conclusions were these: 1st. That they acted by absorption. 2d. That they acted quicker than the endermic method or stomachic doses. 3d. That they acted more effectually. 4th. that a small injected dose was equivalent to a much larger one by the stomach. Mr. Hunter then showed that for speedy action, which he supposed chiefly due to the rapidity of the absorption, this plan was superior to others. 1st. Where the immediate and decided effect of a sedative or narcotic was required. 2d. Where narcotics administered by the usual methods fail to do good; and 3d. Where patients cannot or refuse to take medicine.—*Med. Times & Gaz.*, April 23, 1859.

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16. *Action of Chloride of Sodium upon Phthisis.*—Dr. R. P. Cotton has been experimenting, in the Consumption Hospital, Brompton, with various substances,

with a view of ascertaining their influence on the so-called tuberculous *crasis*. Among others, he has tried the chloride of sodium. "This substance was administered to twenty-five patients, thirteen of whom were males, and twelve females; their respective ages varying from 16 to 38, the majority being about midway between these two numbers. In seven cases the disease was either in the first stage, or the very commencement of the second; but in the rest there was distinct evidence either of tubercular softening or actual vomicæ. To the copious and accurate notes made by Dr. Maxwell, the resident Clinical Assistant at the hospital, I am chiefly indebted for the results of the trial.

"The salt was dissolved in water, and given in doses varying from one to three drachms, two or three times a day, the smaller quantity generally being prescribed at first, and gradually increased; a little compound tincture of lavender was added merely to disguise it. According to its effects, it was continued for a period varying, in the different cases, from two to eight weeks. It was found that one drachm could generally be taken without nausea; but in a few instances two drachms produced some degree of sickness, and three drachms caused vomiting, although, as a general rule, and in the majority of cases, these larger doses did not seem to disagree with the stomach. In two patients one drachm frequently gave rise to nausea, if taken upon an empty stomach, while two or even three drachms could be taken with impunity by the same person soon after meals.

"In fifteen cases the appetite either remained good, or became so during its administration; and in seven the appetite was either bad at first, or was lost under its use. In eight of these fifteen cases the increase of appetite was fairly attributable to the chloride; but in four out of the seven the salt was as fairly chargeable with its loss; thus showing the different effect of the chloride upon different individuals. In only three cases was thirst complained of, and this was generally remedied by freely diluting the solution.

"Fourteen patients visibly improved while the salt was being taken—such improvement consisting principally in the increase of strength and appetite, and the diminution of cough and other general symptoms; eight patients as visibly became worse in their general condition; and three seemed to remain in every respect unchanged.

"In four instances there was a manifest improvement in the physical signs; in six the pulmonary or local mischief as manifestly increased; and in fifteen there was no evidence of much change either one way or the other. It was singular that by far the greater number of cases of improvement, either in general symptoms or physical signs, occurred in the male sex.

"Thirteen of the patients increased in weight—the minimum increase being one pound, and the maximum six pounds; six lost weight—the greatest loss being three pounds, and the least one pound; and in six the weight remained as nearly as possible stationary.

"A large amount of chlorides was always found in the urine of those who were taking the salt; but so little in comparison with the quantity administered, that much must have either passed off by the bowels or remained in the system. No unusual amount of diarrhœa, however, attended its use. The search after chlorides lead to the discovery that the urine of all phthisical patients, even of those in the last stage of the disease, contains such compounds in considerable quantity.

"The remarkable circumstance, so often noticed in the treatment of phthisis, that while the general health and condition are apparently improving, the local disease is nevertheless advancing, presented itself in two well-marked instances.

"In estimating the effect of remedies, particularly in hospitals—and in none more so than that at Brompton—it is necessary to make proper allowance for the influence of concomitant circumstances. Improved diet, rest, hygiene, and hope, have a wondrous effect upon every kind of disease; but after carefully weighing the probable action of such agencies, I have arrived at the following conclusions, viz:—

"1. Chloride of sodium in some cases increases the appetite, and acts as a general tonic.

"2. In doses of one or two drachms gradually administered, it seldom produces either nausea or derangement of the digestive organs, or occasions any considerable degree of thirst.

"3. Its tonic influence in phthisis may fairly rank with many other tonics, such as bitters.

"4. It does not appear either that chloride of sodium is a substance deficient in the tuberculous crasis, or that it has any direct effect upon phthisis when fully developed."—*Med. Times & Gaz.*, May 28, 1859.

17. *Raw Meat in Diarrhœa.*—Our readers have, doubtless, not forgotten the interesting history of the two little twin daughters of a wealthy Mulhouse merchant, who had been reduced by unconquerable diarrhœa to the last gasp of life, and who, fed with the pulp of raw meat, returned, in a few months, to a state of perfect and robust health. Many facts have, since then, confirmed our confidence in the value of this Russian mode of treatment. Mr. Trousseau never allows an opportunity to escape of recommending it, and of pointing out the best manner of rendering it both useful and acceptable.

The meat best adapted to the purpose is the fillet of beef; some patients, however, prefer the centre part of mutton chops. It should be cut fine, pounded in a mortar, and strained through a sieve or cullender. The pulp, thus separated from the cellular texture of the muscular substance, is then gathered with a knife, and rolled in salt or powdered sugar, or mixed with currant-jam.

One of Mr. Trousseau's grandchildren would take it only when mixed with racahout, a farinaceous compound of cocoa, ground rice, and potato-flour, sweetened, and flavored with vanilla. Mr. Trousseau causes it sometimes to be rolled into small salted balls, of the size of a hazel-nut, or in little oblong gobbets, which may be administered in soup, to the number of thirty or forty, equivalent to four or five ounces of meat pulp. In grown persons, and particularly with ladies, the physician will probably meet with a repugnance, which he must overcome by concealing the repugnant character of the medication. For this purpose, some appearance of cooking may be imparted to the food, by exposing a thick slice of the meat, for twenty minutes, to the action of a brisk fire; its surface is thus roasted, the interior parts remaining raw, and being then treated as we have said. Mr. Trousseau has thus caused to be prepared by Mr. Mialhe (one of the principal apothecaries of Paris) meat-pulp combined with confection of roses, destined for delicate stomachs, which is taken without disgust, and even with pleasure, under the agreeable denomination of Damascene Preserve.

In children, the dose of raw meat, the first day, should not exceed 2½ dr. in four meals. It may be doubled on the second day, and on the third attain eight drachms; and so on, without any other additional food than albuminous water. It is easy to measure with precision the quantity administered daily, by means of a small balance and the current coins, the weight of which is well known—the franc being equivalent to one drachm, and the five-franc piece to six drachms. The dose may be carried as far as ten or twelve ounces, and the children gradually recover their good looks, their plumpness, and spirits. At the end of a month or six weeks, when diarrhœa has entirely ceased, the quantity of raw meat can be gradually decreased, and broth or underdone eggs can be substituted, so as to reduce the dose of meat to three or four ounces daily.

It is necessary to be aware that, at first, when already the nature and abundance of the diarrhœa has undergone a favourable change, the motions are red and fetid. In one of the little Mulhouse patients we above referred to, this animal diet appeared to have occasioned the development of tape-worm, a parasite commonly met with in Abyssinia, where the natives feed on raw meat; but this kind of nutriment not being so long persevered in, generally, as was the case in the instance of the little girl alluded to, this circumstance must be considered exceptional, and cannot counterbalance the decided benefits yielded by the Russian method of treatment, in cases of chronic disturbance of the bowels, and especially in the unconquerable diarrhœa which children are subject to in their second year.—*Dublin Hosp. Gaz.*, April 15, 1859, from *Journ. Pract. Med. and Surg.*, Paris.

18. *Retrospect on the Use of Raw Meat in the Diarrhœa of Weaned Children.* By Dr. J. F. WEISSE, Director of the Children's Hospital at St. Petersburgh.—Seventeen years have now elapsed since I first directed the attention of the profession to this invaluable remedy in the above disease[1]; but it was not until I had five years later treated of the subject at greater length[2], that it came into more general use. Soon after the publication of the latter paper, I received from the esteemed editor of the Journal just now quoted, Dr. Behrend, of Berlin, a letter containing the following passage: "You have no idea what interest your communication on diarrhœa ablactatorum and on the use of raw meat has excited; we now use the remedy extensively."

Not long after, Dr. Behrend inserted in the sixth volume of his Journal a letter of M. Marotte, Physician of the Central Bureau of the Parisian Hospitals, from which it appeared that this subject had attracted great attention also in the French metropolis. The author of this letter, which is addressed to Dr. Trousseau, has moreover had the kindness to suggest a theory explanatory of the results I have obtained. From this time the meat cure was generally received, and its utility admitted on all sides. Of the numerous favourable reports recently published, I cannot forbear literally transcribing that contributed by Dr. Eichelberg, because the author has given to the subject the appreciation it deserves. He says: "In consequence of the shortness of the time which has elapsed since this article of diet was first recommended. I have, it is true, only a limited number of observations (somewhat more than twenty) before me, but they all corroborate the remarkable advantages of the plan proposed. It is only in exceptional instances that such children refuse raw meat—the great majority, in fact, consume it with manifest relish. I have observed two very striking cases where the children for several weeks readily partook of this food with the most beneficial results, and at the end of that time suddenly refused it. Natural instinct seems in such examples to be unmistakable, as in the case of sick dogs, which eat grass. The want of osmazome made the children greedily consume the raw meat, but, with the cessation of the want, the desire for that principle disappeared."[3]

As Herr Eichelberg, moreover, has expressly indicated the diarrhœa which sets in soon after the weaning of children (according to my observations usually in two or three weeks after that event), as the affection in which the raw meat cure is attended with certain success, so I have also, in recommending this mode of treatment, confined myself to the same disease; and now, after nearly twenty years' experience, maintain, that raw, scraped beef, to the exclusion of all other medication, is a true specific in this destructive diarrhœa. I therefore consider a remark made by Charles Hogg, in recommending the well-known "beef-tea" of the English, to be quite erroneous. Thus he says: "Beef-tea is an excellent, nourishing, and easily digestible article of food, and completely replaces the juice of meat recommended by Weisse, of St. Petersburgh, obtained by scraping raw flesh."[4] I have in raw beef discovered, not an article of food for children, but a remedy against the diarrhœa in question; nor have I spoken of the juice to be obtained by scraping meat, but the muscular substance itself must be given to the children, having, however, previously been sufficiently comminuted, either by scraping with a knife, or by means of a grater, in order that it may be swallowed without trouble. But the principal point is, that the muscular substance itself, and not merely its juice, should be conveyed into the digestive tube. The English beef-tea has as little beneficial effect on diarrhœa ablactatorum as Liebig's excellent decoction of meat. Both these fluid aliments appear, precisely because they are fluid, to pass too quickly through the intestinal canal; while the meat in substance remains longer in the tube, and by its mechanical irritation may stimulate digestion, and it may, perhaps, also

[1] Oppenheim's Journal f. d. gesammte Medizin, Bd. xiii. page 393. Hamburgh, 1840.

[2] Journal f. Kinderkrankheiten, Bd. iv. pp. 99-104. Berlin, 1845.

[3] Ibid.

[4] Journal f. Kinderkrankheiten, Bd. xiv. p. 113, in the notice of Hogg's treatise "On the Management of Infancy," &c.

neutralize the acridity of the gastric juice. Nor can I participate in Dr. Beer's sanguine hope that raw grated beef may be destined one day to dislodge cod-liver oil from the Materia Medica.[1] Each of these excellent remedies has its definite sphere of medical action in the diseases of children; raw beef in the diarrhœa ablactatorum, cod-liver oil in rachitic affections, with and without atrophy.

In St. Petersburgh, the meat cure in the affection of children under consideration has become, so to speak, completely naturalized; and this has taken place rather through oral communication, and in consequence of the favourable results of the treatment, than from any paper or essay, as I have never published anything in that capital upon the subject. Most of my colleagues have now for several years made use of it, and they all assure me that they have obtained very satisfactory results, even in cases where the employment of other established remedies appeared to hold out no hope of cure. I have myself seen this treatment adopted in about two hundred children, and, in the majority, with the desired effect, provided recourse was had to it at the proper time. I say, at the proper time, for if the disease has already advanced too far, and, particularly, if it has assumed the form of the so-called gastro-malacia, it is only in exceptional instances that we shall obtain a cure. But even in this case there is no other remedy so calculated to allay the most tormenting symptoms, the tantalizing thirst, and the vomiting, as the raw beef. This beneficial effect is produced even after a few meals.

But it has recently been stated, as I have already publicly remarked,[2] that in many children saved by the meat cure, tape-worm, and it is worthy of note, always the tænia solium, that is precisely the species which is not indigenous in St. Petersburgh, has shown itself. A Dr. Braun[3] has felt himself called upon to question this statement; two years later, however, an undoubted authority on this subject appeared in favour of the facts reported by me. Professor D. Von Siebold, of Munich, says, in the last page of his interesting work, "Ueber die Band und Blasenwüemer," Leipsic, 1854: "We can no longer be surprised, or consider their statements fabulous, when physicians report that tape-worms have been found in certain patients after the use of raw meat prescribed as a remedy;" and in the note upon this passage he adds: Compare on this subject Weisse's communications, which, notwithstanding Braun's objections, are worthy of all credit." Herr Von Siebold directs particular attention to the fact that in every instance it was the tænia solium which was passed; and he considers it probable that this species of tape-worm, which is not indigenous in St. Petersburgh, may have been conveyed thither in the undeveloped state in the flesh of oxen, brought from Tscherkask and Podolia.

Only a few weeks before my departure from St. Petersburgh, in June of the present year, a tape-worm, more than four feet long, was sent to me by a colleague, to whom I had warmly recommended the meat cure in the case of a child, aged eighteen months, who had suffered from the diarrhœa in question, and was already very much run down, which worm was passed after the use of the ethereal oil of male fern. This remedy was administered in consequence of the child, who had long ceased to get the raw meat, and was cured of the diarrhœa, having repeatedly passed joints of tape-worm. The attendant physician had already correctly diagnosed the worm to be the tænia solium; I found that it was voided with the head, on which the suckers were plainly distinguishable under the microscope.

I should not omit to state, that in the Children's Hospital under my care, in the diarrhœas of older children, into which the element of dentition no longer enters, and which so largely contribute to fill the lists of mortality, raw meat has been repeatedly and unsuccessfully tried. These cases of diarrhœa generally depend upon ulcerations in the intestinal canal.

Lastly, I may be allowed to call the attention of the meeting to as palatable a remedy as raw beef, in the lientery of adults; I allude to oysters. In two

[1] Journal f. Kinderkrankheiten, Bd. xiv. p. 238.
[2] Ibid., Bd. xvi. p. 384. 1851.
[3] Ibid., Bd. xviii. p. 78, 1852: and in Froriep's Tagesberichten, 1852.

cases, an amount of experience, which, I must admit, goes for nothing, I saw the patients cured by the moderate use of these mollusca. From eight to twelve oysters were taken daily in two meals.—*Dublin Quart. Journ.*, Feb., 1858, from *Journ. für Kinderkrankheiten*, Jan. and Feb., 1858.

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19. *Essential Oils in the Treatment of Puerperal Fever.*—It is well known that oil of turpentine has been used with advantage in some cases of puerperal fever. As this article is nauseous to some persons, and sometimes produces irritation of the kidneys and other unpleasant effects, Mr. H. DOVE, of Norwich, states (*British Medical Journal*, April 9) that he has been induced to try, in its stead, the essential oils, selecting that of peppermint, and giving thirty or forty minims in divided doses during the twenty-four hours. He has now used this oil in seven cases, and in another case, the oil of caraway, with all the advantages and none of the disadvantages of the turpentine. The dull colour of the complexion, œdematous condition of the surface, and offensive evacuations usually observed in puerperal fever, point out the necessity of commencing the treatment with at least one stimulating dose of aperient.

He relates the following case, which was the most severe of the eight in which he used the essential oils:—

"Mrs. G., a delicate woman aged 20, primipara, attended by a midwife, had an easy labour, and did well for four days; but on the fifth, she complained of chills, profuse perspirations, headache, intense thirst, vomiting and purging of offensive matters, and pain and distension of the abdomen. She was restless, her countenance was anxious, breathing short and hurried, tongue covered with a white fur, pulse 160; the lochia and urine were scanty; the skin was of dull colour and œdematous. A dose composed of tincture of rhubarb and castor oil, of each half an ounce, with five minims of the oil of peppermint in a little water, was immediately administered, and thirty minims of the oil of peppermint were given in divided doses, during the twenty-four hours. A spirit lotion was applied to the head, and mustard poultices to the abdomen.

"On the following day, the vomiting had ceased; the headache was relieved, and the pulse was considerably reduced. The purging, thirst, and perspirations continued for a few days and gradually ceased. In this case convalescence was slow, differing from the others, in which convalescence was remarkably rapid. Instead of the loathing usually expressed where turpentine has been used, there was an evident desire to take this oil, and, indeed, to continue it, when the necessity for it had ceased."

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20. *Chloroform in the Treatment of Itch.*—Professor BACK reports the great advantage that has resulted from his treatment of itch by painting the surface with chloroform. Not only does the chloroform act beneficially by killing the acari, but by relieving the irritation of the skin which has been induced by scratching. The painting of even large surfaces was unattended with ill effects, and the temporary burning sensation produced was very supportable as compared with the itching which it superseded.—*Med. Times and Gaz.*, Jan. 15, 1859, from *Schmidt's Jahrb.*, No. xi.

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21. *Herpes Zoster cured by Collodion.*—Mr. K. W. GODDARD relates (*Lancet*, Ap. 9, 1859) two cases of herpes zoster successfully treated by the application of collodion over the whole of the affected surface, with a camel's hair pencil. The application was repeated every twenty-four hours, and in four days the patients were cured.

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22. *Obstinate Chronic Discharge from the Nostril removed by Extraction of a Carious Tooth.*—Mr. FLEISCHMANN, of Wrexham, relates (*British Medical Journal*, April 9, 1859) the following example of this: Miss Rose S., a little girl, aged 5 years, had been troubled for about three months with a constant, though not profuse, discharge of slightly purulent mucus from the right nostril; it appeared to be the sequel of a cold. The mucous membrane, so far as it could be examined, was healthy, and there were no indications of any morbid growth.

She was ordered a strong injection of gallic acid, and took concurrently small doses of the sesquichloride of iron. The only advantage she derived was, that the discharge lost its purulent character; in amount it remained the same, though the treatment was long persevered in, and other local astringents tried. I suspected that there must be some undiscovered local irritation. Not being able, on careful examination, to find anything wrong in the nasal passages, I looked to the condition of the teeth; and, finding the right upper canine carious, removed it. The discharge was much lessened on the next day; and, in the course of a day or two, disappeared altogether.

This short account may, perchance, afford a useful hint to some one; at any rate, it is a good illustration of reflected irritation, and teaches us that oftentimes the *fons et origo mali* is not just where we might expect to find it.

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23. *On Jerking Respiration* (*respiration saccadée*).—Dr. Bourgade is of opinion, and we think justly, that the profession have not paid sufficient attention to interrupted or jerking respiration, as one of the earliest symptoms of pulmonary tubercle. He details nine cases, and states that he has observed others, in which jerking respiration heard at the apex of one lung was the first auscultatory phenomenon indicating the deposition of tubercle subsequently proved by more palpable symptoms, and in part confirmed by post-mortem examination. In discussing the rationale of its production, he quotes one post-mortem examination, which absolutely disproves the views of Messrs. Barth and Roger on this point. They hold that it is due to the presence of the adhesions which are so frequently met with at the apex of the lungs in phthisical subjects. In the case in question there were no adhesions at the apex or about the middle of the lung in which the jerking respiration had been heard. It is to be remembered that the symptom is most commonly met with at a time when no evidence exists of preceding or accompanying pleurisy; the character of the sound and the structure of the parts in which it is found has always seemed to justify our attributing it to a partial constriction of the smaller bronchi owing to adjoining tubercles pressing upon them, the effort of inspiration causing the successive opening of the obstructed passages. We have met with cases in which spasm appeared to be the cause of the constriction; but we hold with Dr. Bourgade that, in the great majority of cases, jerking respiration is a sign of tubercular deposit.

We would indorse the following summary of observations made by Dr. Bourgade. Respiration is jerking when the respiratory murmur presents three or four brief intervals, and the ausculting ear experiences the sensation of a certain difficulty in the expansion of the pulmonary tissue from the prolonged expiratory murmur. The respiratory murmur otherwise preserves its normal timbre, and the symptom is chiefly observed during inspiration; it occurs, but less frequently, during expiration. This change in the respiratory murmur does not persist beyond a limited period; a prolonged expiratory murmur follows, or, more rarely, progressive diminution of the respiratory sound. This fact probably explains the circumstance of the symptom having been overlooked by many hospital physicians, who, seeing phthisis chiefly in its more advanced forms, do not meet with jerking respiration here as frequently as in private or extra-hospital practice. Jerking respiration is commonly limited to the apices of the lungs, which we should explain by the greater resistance of the parietes of these parts favouring the pressure of tubercle upon the adjoining bronchial tubes. When the patient is made to breathe more fully, the symptom is not rendered more palpable, but commonly disappears altogether. Jerking respiration is not always continuous, but at times presents regular intermissions; it may occur at every second, third, or fourth inspiration, sometimes even at greater intervals. It is chiefly at its first appearance that it presents this character, but when well marked it is commonly continuous; like other auscultatory phenomena, it may vary in strength and precision from day to day.

In concluding his paper, the author, though attributing much importance to jerking respiration as an early sign of pulmonary tubercle, states that he does not regard it as an absolute evidence of the deposit having taken place; for this

purpose he justly requires the presence of collateral, general, or local symptoms. —*Brit. and For. Med. Chir. Rev.*, April, 1859, from *Archives Gén. de. Méd.*, Nov., 1858.

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24. *Diagnosis of Melanotic Cancer by the Urine.*—Dr. EISELT reports three cases, which appear to show that the urine offers a means of diagnosis in melanotic cancer. The first is that of a man, aged sixty, who, in 1856, came under observation with symptoms of hepatic cancer, and with cancer of the left eye. There was no icterus, but the urine exhibited a remarkable peculiarity; when passed it was perfectly clear, but on standing it became as dark as porter without losing its transparency. A portion was drawn by the catheter; it was found to contain copious uric acid, and a normal quantity of urea; when exposed to air and light it became dark in a few hours, but concentrated nitric acid caused the change instantly; other oxidizing substances, especially chromic acid, produced the same effect, and the black matter was regarded as melanin, which induced the opinion that the cancer was melanotic, a diagnosis confirmed by the autopsy. A year later a man, aged sixty-eight, was admitted into the Prague Hospital with cutaneous melanotic cancer. The urine at first exhibited the peculiarity shown in the last case feebly, but as the disease spread to the internal organs, and especially as the liver became affected, the reaction of the urine became as characteristic as in the former case. A third case occurred in May, 1858, in which there was hepatic cancer, and cancer of one eye. The urine again induced the attending physician to diagnose melanotic cancer; some urine of May 8th was closed hermetically and kept in the dark; some that was passed on May 9th was also closed hermetically and placed in the shade. On May 25th Dr. Eiselt exhibited both specimens to the College of Physicians of Prague; the urine of May 8th was slightly turbid, pale yellow, and had deposited phosphates; the urine of May 9th was black with reflected, and dark-brown with transmitted light. On opening the first specimen, nitric acid and chromic acid at once induced the black colour. The autopsy confirmed the diagnosis of melanotic cancer, for which there had been no other indication.—*B. and F. Med. Chir. Rev.*, April, 1859, from *Vierteljahrsschrift für die practische Heilkunde*, xv. Jahr., 1858.

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25. *The after Effects of Diphtheria.*—Dr. FAURE, of Paris, has, in a series of cases collected from various sources, directed attention to a peculiar sequela of diphtheria, in which, some time after all trace of the original complaint has completely disappeared, the patient becomes, without known cause, pale and colourless, the limbs are much pained, the muscles lose their power, and he gradually sinks into a state of scarce imaginable debility. Sometimes one portion of the frame and sometimes another seems to suffer most. The legs can no longer carry the body; the arms lose their power; the soft palate dangles like a dead curtain; swallowing, and even breathing, becomes almost impossible; the pupils are dilated, and vision much impaired; sensation is dimininished and sometimes entirely lost, or replaced by formication. In some, sundry parts of the body become œdematous, in others gangrenous; others again are subject to repeated faintings. General reaction is not observable, fever rare, the skin in a certain degree moist. Reason flashes betimes through the gradually increasing dull stupidity, or a wandering smile may now and then light up the vacant countenance; and death finally closes the scene either by syncope, or as the last stage of exhaustion, like a gradual extinction of life. This affection has been referred to by Bretonneau, Trousseau, Blache, and others. Bretonneau regards these symptoms as the effect of a diphtheritic blood-poisoning. The most successful treatment has consisted in the administration of quinine and iron.—*Ed. Med. Journ.*, March, 1859.

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26. *Dependence of Tape-Worm on the Use of Raw or Underdone Meat.*—The interesting discoveries of Von Siebold and of Küchenmeister, and their speculations as to the various modes in which the ova of intestinal worms enter the human body, induced Dr. J. BARCLAY, Physician to the Leicester Infirmary, to inquire of all his tape-worm patients, during the last twelve months, whether

they were fond of meat so underdone as to be a possible vehicle of the germs. In every one of the ten cases observed by him he ascertained that not only underdone, but really absolutely raw meat had been eaten. In some instances the fact was only elicited by cross-questioning, in others it was at once acknowledged. —*Med. Times and Gaz.*, March 26, 1859.

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27. *New Observation on Amyloid Degeneration.* By Rud. Virchow.—Among various causes of amyloid degeneration which occurred to our author, one in particular was signalized by the number of the organs affected, and also by the degeneration of several organs not hitherto known to be so affected. The case was that of an old woman long affected with Bright's disease, and who died dropsical. The liver, spleen, and both kidneys were much enlarged, and had undergone amyloid degeneration. The liver weighed 268.7, the spleen 473.8, the right kidney 230, and the left, 190.3 grm. The degeneration of the spleen was so general, that it looked and felt as if frozen. In the kidneys, the smaller arteries and glomeruli were chiefly affected. The liver-cells were unaffected, and the degeneration confined to the small vessels inside the acini. The intestines had an anæmic, transparent, pale gray, sodden appearance; and micro-chemical examination showed the vessels of the villi to be affected—the villi themselves patched with amyloid degeneration, which extended along the walls of the arteries deep into the submucous tissue, the chemical reaction becoming distinctly visible to the naked eye. The vaginal mucous membrane, the uterus, Fallopian tubes, and ovaries, were all affected. The uterus was enlarged, of a pale, yellowish-gray, translucent appearance; the amyloid degeneration was wholly confined to the organic muscular fibres, which formed large and distinct bundles, while the vascular and connective tissues were quite free. So that one form of hypertrophy of the uterus must be regarded as an amyloid degeneration thereof.

The muscles of the heart were similarly affected, but in a less degree; the cardiac function remaining comparatively unaffected, as evidenced by its cadaveric rigidity. Peri and endocardium were also affected; and even in the nerves, here and there between the fibres, round translucent masses seemed shoved in. In the lungs the same infiltration existed, not as a granular deposit, but as an uniform waxy deposit in the smaller vessels and the alveolar framework. Iodine and ioduretted sulphuric acid (Iod-Schwefelsäure) gave distinct reactions with these deposits; the slow action of the latter produced a blue coloration, which remained unaltered for six weeks.—*Ed. Med. Journ.*, from *Virchow's Archiv.*, Feb. 1857.

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28. *Anatomy of Cirrhosis.*—M. Sappey has communicated to the Imperial Academy of Medicine the results of investigations made by him with the view of determining the manner in which the blood of the portal vein reaches the inferior vena cava, when, from disease, the circulation through the liver is impeded. It is well known that in certain affections of this organ, and more particularly in cirrhosis, the capillaries become partly obliterated, and thus an obstacle is presented to the passage of the blood of the portal vein. The blood seeks a new passage, and without doubt it ultimately reaches the main current of the circulation. The question arises, through what vessels does the blood effect this new passage? In addressing himself to answer this question, M. Sappey examines the various opinions which have been expressed on this subject within the last few years, discusses them, and brings forward various facts and arguments from which he considers himself justified in drawing the following conclusions:—

1. There is no authentic instance of the persistence of the umbilical vein in the adult; and all the cases which have been considered as proving the persistence of the vessel, should be regarded, on the contrary, as so many examples of dilatation with hypertrophy of one of the small veins in the suspensory ligament of the liver.

2. This little vein, by undergoing dilatation and hypertrophic enlargement, produces dilatation and hypertrophy of the veins with which it anastomoses,

and becomes thus the starting-point of a channel of derivation which extends from the sinus of the portal vein towards the principal vein of the lower limb.

3. This derivative channel is traversed by the blood from above downwards, and not from below upwards, as all authors have hitherto taught.

4. It may follow either the veins situated beneath the aponeurosis or the abdominal subcutaneous veins. In the first case, neither varices nor varicose tumours are developed in its course; in the other, on the contrary, one or more of these tumours are generally produced.

5. The presence of the venous current from the liver to the crural vein is indicated by a *frémissement* perceptible to the hand, and by a stethoscopic murmur.

6. Lastly, the existence of this current may be considered, in the great majority of cases, as a symptom of cirrhosis of the liver; and while it always points to the cirrhosis as being of old standing and incurable, it should be regarded as a favorable sign, removing as it does any fear of abdominal dropsy.—*Edinburgh Medical Journal*, April, 1859.

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29. *Fibrous Tumour in the Left Auricle of the Heart.*—June 8, 1858, Mr. CASTILLO, student in the School of Medicine, presented to Drs. Rios, Odriozola, Villar, and ORNELLAS, a heart, which the last named gentleman describes.

Simple inspection shows it to be larger than natural, but softer and of normal colour. On opening its cavities, some small sanguineous coagula escape, and we are enabled to see that these cavities are somewhat dilated, but in other respects perfectly normal, except that of the left auricle. The walls of the ventricles are slightly attenuated, those of the left being thinnest. The columnæ carneæ present no peculiarities. The vascular orifices of the organ, their diameters, and valves are healthy.

In the cavity of the left auricle is a very large and very hard mass, filling at least three-fourths of its superior part. In size and weight it is comparable to a large sized hen-egg, and more or less decidedly cuboid in form, offering on its anterior and superior faces three or four deep fissures, which divide the mass into three principal lobes. The hardness of this tumour is very great; fibrous or cartilaginous in one part, less consistent in others, but no part can be broken by the hand.

The first lobule is the most voluminous; it is flattened, planiform, and twelve or fourteen millimetres in thickness. It is inserted by one of its large faces into the posterior wall of the auricle to the extent of eight or nine centimetres square. This lobule affords the chief points of insertion for the second, which, through the medium of the first, is attached to the auricular parietes. The consistence, hardness, and resistance of the first lobule are very great, but in these respects inferior to the second.

The second lobule, which approximates the first in size, inclines from below upwards upon its anterior face, and is two centimetres in length and breadth, and one in thickness. Its insertion is upon the inferior edge of the first lobule, and continuous with it. These two first lobules might be considered a single, hard, flattened tumour, doubled in two; one part of which adheres to the posterior wall of the auricle, and the other inclines from below upwards upon its anterior face. If the second lobule could have developed itself in the cavity of the auricle during life, it must have completely obstructed the left auriculo-ventricular orifice; but the anterior wall of the same auricle prevented this movement, which only became possible after division. This orifice was free from the tumour, whose nearest point of insertion was three or four centimetres distant from it.

The third lobule is entirely independent of the two first; it is inserted at the left of the first, between its corresponding edge and the orifices of the left pulmonary veins, with the lining membrane of which its external covering seems to be continuous. Its form is polypose, pediculate two or three centimetres long, and in its greater diameter, and is attached by its narrowest extremity. It is remarkable that this third lobule leaves the left pulmonary veins, which are so near to it, free. It has an appendix the size of a small filbert, situated between it and the second.

As already stated, the left pulmonary veins and auriculo-ventricular opening

are perfectly free. The same is true of the right pulmonary veins, which open about a centimetre distant from the right edge of the first lobule.

As to the structure of this tumour, the scalpel crepitates in it as when cutting cartilage, especially in the second lobule, and is throughout composed of a very dense fibrous texture; it presents bundles of fibres, especially distinct on the edge of the preparation. These bundles of fibres, extremely slender, filiform, are crossed by fibres equally slender, and mingled with innumerable elementary granules. Strong nitric acid renders the fibrillar structure more visible as it dissipates many of the granules, and the fibres become paler. Such is the structure of the second lobule, which is most dense, and in which a capillary arrangement can be perceived. The other lobules have the same structure, but with fewer granules and fibres than in the second lobule. The same may be said of the envelop of the tumour, which appears to be continuous with the endocardium, but no pavement epithelial cells could be discovered on its surface. The appearance of this fibrous texture is represented in fig. 3, plate xxiv., in Lebert's great work on pathological anatomy, to which the reader is referred.

The other pathological conditions of the case are described by Mr. Castillo, student, in a note addressed to Dr. Ornellas.

A large quantity of serum of a yellow tint, like that of ascites, was found in the peritoneal cavity. The liver, spleen, pancreas, and kidneys offered nothing remarkable, except that the spleen was harder and the left kidney larger than usual. The supra-renal capsules and ureters were normal, as were also the stomach and intestines. Some liquid was found in the pericardiac cavity (a half an ounce, more or less), and in the pleuræ. The large vessels in the vicinity of the heart were explored, but nothing observed. The cranium was not opened.

The heart above described belonged to Carnilo Bartholomé, a Frenchman, aged thirty-three years, of nervous temperament, feeble constitution, unmarried, and a carpenter by profession. This patient was in the clinical ward of Dr. Rios, in the Hospital San Andrés [Lima], from February 23, 1858, having been sick at home eight or ten months previously.

Drs. Rios and Villar had diagnosed hypertrophy of the heart, and had distinctly heard a bellows-sound in the systole, and in all the brief silence which was prolonged to the diastolic sound, which it totally masked, the sound being most pronounced at the base. Dr. Rios compared this sound to that of the firing of cannon at a distance.

After being in the hospital a month, Carnilo had hæmoptysis, which was successfully met by venesection; and afterwards he had anasarca, which began by œdema of the lower extremities, &c. In the course of his treatment, digitalis, the atrophic potion of Magendie, iodide of potassium, cicuta, acetate of lead for the hæmoptysis, &c., were administered. Applications of ice over the cardiac region afforded most relief to the strong impulses of the heart.

In the close, violent attacks of dyspnœa supervened, and increased the sufferings of the patient, in spite of the administration of belladonna, stramonium, and hyoscyamus: his sufferings were atrocious; his agony long and painful.

How explain the extensive bellows-sound in the systole and at the base, heard by the attending physician? Was it the mechanical pressure exerted by the left auricle dilated, which determined a temporary narrowness of the aorta and pulmonary artery, at the same time that the proper capacity of the auricle was diminished? How explain the development of this fibrous tumour in the cavity of the auricle? Was it hypertrophy of the fibrous and elastic coat of the endocardium that constituted it? Such an explanation does too much violence to the facts. In a word, everything shows that this tumour, developed in the posterior auricular wall, is of a fibrous nature—its form, consistence, hardness, resistance, its slow development, its slowness in determining death, from the circulation being more or less accustomed to its presence—are only explained by its fibrous nature, which the microscope has discovered. A fibrinous polypus would not present such physical characters, and its size would have caused death immediately after its formation.

The heart just described is highly curious, and its pathological condition extremely rare. We have been unable to find in our researches a similar case. It is true that Gluge, of Brussels, and Hodgkin, of London, have reported cases

of intra-auricular tumours, but have cited no one having the hardness and structure of this. Gluge has presented a most interesting case of a red tumour developed in the left auricle of the heart of a woman, aged fifty-two years. The cavity of the auricle was entirely occupied by the said tumour, which was enveloped in a proper and delicate membrane; and it had a great quantity of capillaries in its interior, constituting a reticular plexus. This tumour, which the Professor attributed to a sanguineous coagulum, is an instance of the highest organization of pathological tissues developed in the auricles we have been able to find. ORNELLAS, Lima. July 25, 1858.—*Gaceta Medica de Lima*, No. 46, August 7, 1858.—W. S. W. R.

SURGICAL PATHOLOGY AND THERAPEUTICS, AND OPERATIVE SURGERY.

30. *Popliteal Aneurism successfully treated by flexion of the Knee-Joint.*—Mr. ERNEST HART related a case of this kind to the Royal Medical and Chirurgical Society (April 26, 1859), under the impression that they might be interested in the successful treatment of so formidable a disease as popliteal aneurism by the simple flexion of the knee-joint. J. S. aged forty-one years, consulted him in September, 1858, having a popliteal aneurism in the right ham. It was globular, of the size of a small apple, and situated at the lower and outer part of the popliteal space. It had a full beat, but was not very near the surface. Placing the patient on the sofa, and baring the leg in order to make a careful examination of the tumour, Mr. Hart found that its pulsation was affected by the angle at which the leg was bent upon the thigh, and that when very complete flexion was effected, its thrill almost wholly ceased. Concluding that in this position the course of the blood through the tumour was greatly retarded, he conceived the hope of effecting the cure of the aneurism by the deposition of active clots, if the leg could be retained for a sufficient length of time in the bent position. After a week's preliminary rest, treatment was commenced by bandaging the leg from the foot to the knee (not covering the tumour), thoroughly flexing the leg on the thigh, and retaining it in that position by the application of a stout roller. He was a thin, wiry man, and the flexion produced no inconvenience to him at the time. He passed a better night than during the previous week, when severe pain had been present in the aneurismal sac. What pain or annoyance was complained of during the treatment was referred to the knee-cap, but it was very trifling, and "barely deserving to be called pain." The tumour was examined on the morning of the third day (about forty hours after flexion was enforced), and considerable solidification had occurred. On the fifth day, the tumour was hard and solid, and neither pulsation nor thrill could be detected. The leg was lightly attached to the thigh at a right angle. On the seventh day, the patient was allowed to move about, the foot being slung. On the twelfth day, the leg was completely straightened, and the patient walked on it with ease, limping from stiffness at the knee-joint consequent upon confinement. Six weeks subsequently, the tumour was hard and firm, and much smaller. After three months, it was barely perceptible, and there was pulsation in that part of the artery. The patient was seen at various stages by the author's friends, Mr. White Cooper, Mr. Coulson, Mr. Holmes, of St. George's Hospital, Mr. Flower, of Middlesex Hospital, and Mr. Buxton Shillitoe. The treatment by flexion in this case was perfectly and immediately successful. It was unattended with any difficulties, it offered no inconveniences, and was not followed by any other than satisfactory results. The case, however, was one particularly well suited for the essay of such a plan of treatment. The patient was not stout, which renders flexion difficult; nor was he aged, which makes it painful. The tumour was of average size and of average prominence; when the knee was bent, the aneurismal sac was below the line of flexure. These he believed to be all favourable circumstances. Cure was evidently effected in this method by the retardation

of the current of blood, and the consequent deposition of active clots in the sac —the only manner in which satisfactory cures could be anticipated. This result was probably effected by the combined influences of pressure on the sac by the surrounding fascial and muscular tissues, and acute flexion of the artery. In so far as it was due to pressure, it appeared to be a return to the old method of treatment by direct pressure, but was free from the inconveniences of the screw and pad, which were open to the reproach of occasioning gangrene of the skin, rupture of the sac, and other accidents. Its simplicity and its success in this case appeared to strongly recommend it for further trial. If it were not always successful, there was not any other method free from the same objection; and there seemed reason to hope that the principle might admit of efficient application to a number of cases in which aneurismal tumours were developed opposite to the joints of the limbs.

Dr. Alex. Shaw also reported a case cured by the same method. The patient, aged 30, first perceived a pulsating tumour in the left ham a week before his admission into the Middlesex Hospital. It was of the size of a lemon, occupied the centre of the popliteal space; was easily compressed; the pulsation was strong, and there were other signs of its being a recent aneurism. On December 1, the knee was secured in the bent position by a band brought round the foot and thigh, and fixed near the hip. The immediate effect of the flexion was that the patient ceased to feel the beating of the tumour, and that on inserting the oiled finger into the flexure behind the knee no pulsation could be discerned. On the fourth day, when the limb was unbound, the tumour was found to have lost about a third of its original size; its walls were thicker and denser, the force of the pulsation was considerably diminished, and the sac had receded more deeply into the popliteal cavity. Gradual improvement continued to take place. Between the third and fourth week from the commencement of the treatment the sac had become greatly reduced in size; its walls appeared nearly solid, and the pulsation was so faint that it was expected at each day's visit to find it extinct. The treatment was varied by occasionally undoing the strap, which confined the knee, for several hours together; but, owing to the stiffness caused by the long continuance of the flexion, the position of the joint was not much altered by the relaxation. It was not till the thirty-eighth day that the pulsation in the tumour altogether ceased. The sac was at that time about the size of a walnut. The patient gradually recovered the power of extending the joint. On the fiftieth day he could walk with only a slight halt, and on the fifty-sixth day he was discharged. During the first ten days the patient complained of the pain, as well as the irksomeness, of keeping his knee constantly bent; and for a slight swelling of the joint a lead lotion was applied. Afterwards he made light of the inconvenience, and he never at any time asked to have the belt relaxed. At the close of the case, the author offered a few brief remarks on the principle on which the cure was effected; and, in illustration, added the observation that, by extreme flexion of the knee-joint of a sound limb, the force of the current of blood through the popliteal artery can be weakened to such a degree as to cause stoppage of pulsation in the tibial arteries.

Mr. Fergusson congratulated the authors on the success which had attended their efforts, and upon having made a very valuable addition to the practice of surgery. He thought the treatment of aneurism was greatly benefited by the application of pressure, and also by "manipulation," and which he anticipated would often obviate the necessity of resorting to the knife. Though there might be some failure in the cases detailed, that very circumstance should act as an encouragement to them to persevere in testing the value of the method recommended. The plan had been tried three or four years ago in King's College Hospital, where one of the house-surgeons had found in a case of popliteal aneurism, that pulsation in the tumour ceased during the flexion of the leg upon the thigh. The aneurism was of the size of the fist, and was treated by pressure on the groin, and flexure of the leg upon the thigh. No benefit, however, resulted from it, and the man becoming impatient of the treatment, went out of the hospital, and died of another disease. There was another case of aneurism in the popliteal space, in which pressure gave encouraging, but tardy results. In this case it was discovered that on extending the leg to its full degree, after pressure was employed, pulsation had entirely ceased.

31. *Manual Compression in the Treatment of Aneurism and Inflammation.*—VANZETTI, Professor of Clinical Surgery at Padua, observes, in a recent communication to the French Academy of Sciences, that although compression of the artery by the hand has occasionally been employed adjuvatory to other means of treating aneurism, yet this simple and natural method had never been proposed as the sole means of treatment, until he himself resorted to it. Since his visit to Dublin, in 1843, when he had the opportunity of observing the inconveniences attendant upon the production of compression by the aid of mechanical appliances, he has had in view the desirableness of substituting the action of the hand. It was not until 1853, however, that he first practically realized the idea. A mason presented himself with a popliteal aneurism the size of an orange, and after he had been prepared by rest, diet, and nitre drinks, he was taught how to compress the femoral artery, and was directed to do this several times in the day. At the end of a fortnight, the compression was kept up more methodically, being continued, at intervals, so as not to weary the patient, for at least two hours at a time. Solidification then took place at the end of forty-eight hours. The tumour disappeared rapidly, and the man has continued well since. The second case occurred in the person of an officer of the Chasseurs, the popliteal aneurism being as large as a lemon. Having employed occasional compression of the femoral at home at intervals during a month, he came to the Hospital, and then five hours' continuous compression, kept up by the pupils, secured solidification. He is now on duty in the army. Case 3. A woman, aged 38, was admitted into the Padua Clinic, with a frightful protrusion of the left eye, this having originally commenced during the throes of labour. As all the symptoms of aneurism of the ophthalmic artery were present, compression of the left carotid was put into force. The intervals were very short, for if continued for more than a minute the pressure produced faintness. After four days all sounds and pulsation had ceased, and a few days later the eye reassumed all its normal characters. 4. The next case was an aneurism at the bend of the elbow, under the care of Professor Gherini, of Milan; and manual compression of the brachial produced solidification in three and a half hours. 5. Dr. Gelmi, of Verona, treated a case of popliteal aneurism by means of pressure of the femoral, first for two or three hours, and then for one or two hours per diem; and by the twentieth day the leg had resumed its normal condition. 6. A patient came under Professor Riberi's care at Turin, with an aneurism at the lower third of the femoral, and which had ensued on a fall. Four hours' compression produced the necessary solidification. 7. In the case of a woman who suffered from protrusion of the eyeball, dependent on aneurism, compression was made on the carotid during five minutes five or six times in the twenty-four hours. On the seventeenth day, and after 440 minutes of compression, all appearance of projection had been removed. The reason that indirect manual compression has not excited earlier attention, as a means of treating aneurism, is probably the idea that it required very long continuance. The cases related, however, prove that the time is in reality very short, and the compression being employed intermittingly is attended with neither pain nor danger.

Encouraged by his success in the treatment of aneurism, Professor Vanzetti has resorted to manual compression in the case of inflammation of the limbs, whenever the artery has been accessible; and such success has attended its application to the femoral, brachial, and subclavian arteries in phlegmon and arthritis, that it now forms the ordinary means of treating such cases at the Padua Clinic whenever it is practicable. Employed promptly, it soon may arrest the progress of the inflammation, more time being required when the process has been set up during some period. In the case of severe or much advanced inflammation, although not of itself competent to effect a cure, it is the most powerful adjuvatory means. In the face of the great advantages derivable from this means we must not be deterred by apparent difficulties in the execution. Persons can be generally got to make the compression, or the patient may be taught to do this; and, in a case of great urgency, the surgeon himself should perform it for two or three hours. In general, compression need only be kept up for eight or ten minutes, and, after resting, again resumed. The Professor relates two cases as remarkable examples of the efficacy of this treatment; one

being an instance of a bad phlegmonous erysipelas of the arm, treated by compression of the subclavian; and the other a case of acute arthritis of the waist, treated by compression of the brachial.—*Comptes Rendus*, T. xlvii. pp. 471–5 and *L'Union Méd.* 1858, No. 58, No. 115.

The *Annali Universali de Medicina* for July, 1858, contains notes of two additional cases of aneurism of the ophthalmic artery treated by digital compression with success. One of these is related by Dr. Gioppi, Professor of Diseases of the Eye at Padua, and the other was communicated by Dr. Scaramuzza, of Verona, to Dr. Vanzetti, for publication. Dr. Vanzetti appends to the case the following summary of the general subject of digital compression: 1. The dominant principle of the treatment is that the compression should be complete and intermitting. 2. Complete compression when made by the finger is not painful. 3. Complete compression made during a given time produces an immensely greater effect than does incomplete compression continued for a like period. 4. Incomplete compression may, however, be resorted to when any local or general circumstances do not allow of its being made completely. 5. The compression may be intermittent, for being complete it is powerfully efficacious in effecting solidification, even when continued for a brief space of time at short intervals. 6. The person employing it should continue it until his hand has need of rest, and he should resume it when this has been obtained, discontinuing it during the night, in order that the patient should enjoy his sleep undisturbed. 7. The patient can compress for himself the femoral, radial, branchial, carotid, and frequently the subclavian, and can continue it for about five to eight minutes. 8. The rapid cures obtained by Gherini and Riberi by means of compression continued uninterruptedly for a few hours have not been attended with any accident. 9. The causes why an aneurismal tumour, which has ceased to pulsate after continuous compression for some hours, may, perhaps, as happens sometimes after the ligature, in place of solidifying, inflame, suppurate, or become gangrenous, are not as yet well known, and call for further study. 10. It is possible that the cruor does not become solidified, or softens in consequence of a pre-existing morbid condition of the sac, or owing to the disturbance of the capillary circulation of its parietes; and that the inflammation and subsequent gangrene of these may be the cause and not the effect of the successive changes in the coagulated cruor. 11. By the employment of complete and intermitting compression, the practitioner may cure his distant patient in two visits. At the first he teaches him how to make compression himself; and at the second visit, made two or three weeks afterwards, accompanied by an assistant, he makes complete and continuous compression during a few hours, which will suffice to complete the commenced solidification, if it be not already completed. 12. No application should be made to the limb, which must be laid in a comfortable position. Compression in certain cases sufficing alone, may in others be aided by Valsalva's preparatory treatment, which, if superfluous in many cases, may be highly necessary in others. In the *Annales d'Oculistique*, November, 1858, is a translation of an interesting paper by Professor Gioppi, of Padua, in which, after taking a survey of the present state of our knowledge concerning aneurism of the ophthalmic artery, he relates a case in which digital compression proved completely successful.—*Med. Times & Gaz.*, March 19th, 1859.

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32. *Treatment of Stricture of the Urethra.*—Mr. Wade lately read an instructive paper on this subject before the Medical Society of London. He said that it was well known that the means adopted by surgeons for the relief, or cure, of urethral stricture were usually classed under three heads: 1st, dilatation; 2d, the application of some escharotic substance to the diseased urethral tissues; 3d, division of the obstruction, either from within the urethral canal by some cutting instrument, as the lancetted catheter, or some one or other of a host of contrivances; or from without by external incision, now commonly called perineal section. Unaided, or simple dilatation was the method which, for a long time, had been principally relied upon by British surgeons for the relief, or cure, of urethral stricture. There was, he believed, no better mode of proceeding in a very large proportion of cases, and such had been its successful results,

that many very able surgeons had discountenanced every other mode of treatment. His own experience had long convinced him that the great error with regard to dilatation has been an attempt to do too much at a time, by which the disease had been aggravated instead of relieved. The urethra had, in fact, been but too frequently treated as if it were an inert, lifeless tube, instead of a living structure, possessing more or less exquisite sensitiveness. Mr. Wade then fully described the different kinds of dilatation, and the instruments commonly used in the different methods, and said he would not pass over, without comment, a kind of dilatation, to which the term "special" had been applied. Particular instruments of various kinds had been invented for the purpose of effecting dilatation more promptly than those in ordinary use. There were dilators of water, of mercury, and of air, which had been much lauded by their inventors. He had as yet no reason to believe these dilators to be preferable, or even comparable, to those in ordinary use, such as bougies, catheters, and sounds, which are much more manageable than the former. He must not omit to mention two modes of effecting prompt dilatation which had lately attracted considerable attention—those of Mr. Thos. Wakley and of Mr. Holt. The dilator of Mr. Holt was a modification of Perrève's instrument. Mr. Thos. Wakley's ingenious instruments were too well known to need description. From the strong testimony of their good effects which both these gentlemen had brought forward, it could not be doubted that in many cases these dilators might be used with advantage to the patient. Urethrotomy, or internal division of strictures by the lancetted catheter and other cutting instruments, had been but little practised in this country. In this method, division of the stricture was effected either from before backwards, or from behind forwards. Mr. Wade then described the various modes which had been resorted to by English and foreign surgeons to effect these objects. Perineal section, as described by Mr. Syme, was a "simple and easy mode of curing permanently the most difficult cases of urethral stricture, and unattended with danger to life." That "division of a stricture by external incision is sufficient for the complete remedy of the disease in its worst form; that in cases of less obstinacy, but still requiring the use of the bougie, division is preferable to dilatation, as affording relief more permanently and safely." From such a description from such high authority, it would not excite surprise that the new proceeding became for a time the fashion. No operation had probably been more fully tested than perineal section. That the sanguine expectations regarding the extraordinary efficiency of this operation entertained by Professor Syme should have ended in disappointment, was nothing more than had occurred with other remedial measures which had disappointed expectation. Long before Mr. Syme's adoption of perineal section, Sir Benjamin Brodie recommended the same operation in traumatic stricture, when the contraction would not yield to ordinary dilatation. Sir Benjamin observes "that in such cases a small staff is to be introduced into the bladder, and the cicatrix of the urethra divided from the perineum, a gum catheter being introduced afterwards, and allowed to remain until the wound is healed over it." That perineal section was neither a certain cure for urethral stricture, nor unattended with danger to life, was now well known. Much information regarding perineal section would be found in the treatises on Urethral Stricture by Professor Lizars and Mr. H. Smith.

Mr. Wade observed that the only method of treatment there remained for him to notice was that of the application of caustic to urethral strictures. It was almost superfluous for him to say that nitrate of silver and potassa fusa had, for a long time, been the only caustics employed for the relief, or cure, of such obstructions. Of the effects of the nitrate of silver in these affections, he had personally had but little experience, having for a long time entirely given up its use in such cases. Those, however, who desired information on this subject had only to read Sir Everard's Home's work on "Strictures of the Urethra." It might be questioned if the powers of any remedial agent were ever more fully and severely tested than those of the nitrate of silver by that eminent surgeon. To Mr. Whately, the contemporary of Sir E. Home, we were indebted for the introduction and strong recommendation of potassa fusa as a valuable therapeutic agent in urethral stricture. With regard to the employment of the caustic

alkali in this disease, it would be unnecessary for him to offer many observations, having so frequently recorded his high opinion of its extraordinary efficacy as to be looked upon as rather enthusiastic on the subject. Having for more than twenty-five years had constant opportunities of fully testing the powers of the potassa fusa, as an adjuvant in the dilatation, in the more obstinate forms of urethral stricture, he could truly state that every year's experience had increased his high estimation of its value. The effects of the nitrate of silver and of the potassa fusa did not admit of a comparison, as they were totally dissimilar; the former, when freely used, from its tendency to cause adhesive inflammation, often increases the urethral obstruction, whilst the remarkably solvent powers of the latter have no such effect. The effects of the alkaline caustic were, indeed, so strikingly superior to those of the nitrate of silver, that the preference which has generally been given to the latter was not easily to be accounted for. Mr. Wade, after having quoted some passages from Mr. Whately's work on Stricture, in illustration of the method of using the potassa fusa adopted by the latter, then briefly described that employed by himself. Mr. Wade rarely employed any other instrument for applying the potassa fusa to the stricture than the common wax bougie. The cases in which he had found the potassa fusa useful might be generally described as—1st, strictures having a cartilaginous hardness, impermeable as well as permeable; 2dly, strictures which bleed more or less freely on the introduction of the bougie; 3dly, irritable strictures. Time would not permit him to give cases in illustration of this method, or to enter further into details. Those, however, who were interested in the subject would find in his work on "Urethral Stricture" all the information it was in his power to afford. It would be seen that his views with regard to this method of treatment differ materially from those of Mr. Whately. He (Mr. Wade) did not use potassa fusa in all cases indiscriminately, but only in such as do not yield satisfactorily to dilatation. He had found it generally necessary to employ the caustic alkali in much larger quantities than Mr. Whately recommended, the minute portions used by him having produced scarcely any perceptible effect upon strictures, which, however, yielded to its more free application. But its greatest value was in impermeable strictures, to which Mr. Whately did not consider it applicable. These observations could not be considered as disrespectful to that able surgeon, as all improvements in our profession are progressive.

In concluding this part of his subject, it might be as well to state that the method of treating urethral stricture by potassa fusa was brought forward by him in a paper read at the Westminster Medical Society on the 15th of February, 1840. The testimony which from time to time he had published regarding its efficiency and safety had, he was happy to say, at length led to its employment by some of our best practical surgeons; and he entertained not the slightest doubt that the potassa fusa would, at no distant period, be regarded as one of the most valuable therapeutic agents in urethral stricture.

With regard to constitutional treatment, he would only observe that strict attention to the general health is as necessary in urethral stricture, as in other local affections of a more or less serious character; and that the surgeon will do well to bear in mind the principles inculcated in Mr. Abernethy's memorable "Observations on the Constitutional Origin and Treatment of Local Disease." In these days of "conservative surgery," it might be proper to ask how far the employment of caustic potash as a substitute for the knife may be regarded as entitled to any honour in this question. If an operation is the "opprobrium of surgery," any remedy which prevents the necessity of such operation is, at all events, "conservative." He (Mr. Wade) left others to determine how far the potassa fusa answers the purpose for which it is intended as a "conservative" agent.

The conclusions arrived at from the preceding remarks might be thus briefly summed up: That simple, unaided dilatation is the method which should commonly be adopted; and that it will, in the great majority of cases, succeed in affording satisfactory and permanent relief. There were, however, numerous cases in which the relief obtained by this method would be neither sufficient nor permanent; and in these the patient must depend, for any considerable improve-

ment in his condition, either on the application of caustic to his stricture, or on its division by some cutting instrument.

That internal section, when practised anterior to the bulb, is attended with but very slight risk; but when had recourse to for obstructions at the urethral curve, it has not unfrequently proved dangerous.

That external division, whether practised according to the old method, in impermeable, or that of Mr. Syme, in permeable stricture, from its disastrous results, is an operation justifiable only in the most urgent cases.

That Mr. Syme's operation will very seldom be required, it being only applicable to permeable obstructions; as every surgeon knows that after an instrument has been passed through a stricture, the greatest difficulty of the case ceases.

That in whatever manner a stricture may be divided, to preserve the opening made by its division, in most cases it will be necessary to have recourse to the regular use of the bougie, or other dilating instrument, for a considerable length of time afterwards.

That in intractable cases, as a general rule, he believed that the use of the potassa fusa would be attended with the most beneficial results; he was fully convinced of its being a perfectly safe proceeding.

In concluding these few brief comments on the treatment of urethral stricture, he could truly say that nothing but the knowledge that the employment of the potassa fusa in bad cases of stricture would in most instances prevent the necessity of resorting to operations attended with more or less danger, had induced him so perseveringly to bring before the profession his views with regard to its employment. He again recommended his professional brethren to give the potassa fusa a fair trial in the more intractable forms of urethral obstruction. It must be recollected, in recommendation of that plan of treatment, that it involved no danger; that it was impossible to do harm when properly applied; and that even should it be deemed necessary to resort to the knife, the surgeon would at least have the satisfaction of knowing that he had done all in his power to save the patient from a formidable, dangerous, or even fatal operation.—*Lancet*, May, 14, 1859.

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33. *New Mode of Relieving Retention of Urine.*—LANGSTON PARKER, Esq., Surgeon to Queen's Hospital, Birmingham, states (*British Med. Journ.*, May 21, 1859) that he has very recently succeeded, in two separate instances, in relieving retention of urine in the following manner:—

"A gentleman lately entered my consultation-room in great pain from retention of urine. He had not passed water for many hours; the bladder was much distended. He stated that ineffectual efforts had been made to pass a catheter, during which operations he had lost a considerable quantity of blood. I attempted to relieve him by the catheter, but failed to do so; I tried instruments of various sizes and various curves, but could not succeed in passing one into the bladder. I then took a No. 2 wax bougie, and inserted a small portion of potassa fusa into the end of it, after the manner proposed by Mr. Whateley, and practised by Mr. Wade, in the treatment of permanent stricture of the urethra. I well moulded the wax over all but the extreme point of the caustic, and passed it rapidly down to the point of obstruction; by pressing against this for a short time, it yielded, and I had the satisfaction of finding the bougie easily enter the bladder. I directed the patient to strain as I withdrew the instrument; a stream of urine followed, and the bladder was emptied. The retention did not again occur, and very little irritation accompanied or followed the proceeding. On the next day, the patient made water freely, but in a small stream.

"The second case was very similar. The patient had travelled some distance by rail. The bladder was much distended, the symptoms urgent, and a catheter could not be made to enter the bladder. A small wax bougie was armed as in the last case, passed down to the stricture, and firmly pressed against it. It yielded very shortly; the instrument entered the bladder, and a stream of urine followed its withdrawal. This patient had a second attack of retention two days afterwards, which was completely relieved in the same manner.

"A modification of this plan might be attempted by inserting a small piece of potassa fusa into the extreme point of a small gum-elastic catheter, and using it without the stilette. I am sanguine enough to hope that many cases of retention of urine might be easily and quickly relieved by the simple means I have suggested, and more formidable and dangerous operations thus frequently avoided."

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34. *Radical Cure of Hydrocele by the introduction of Iron Wire.*—Dr. F. B. Quinlan, Surgeon to St. Vincent's Hospital, relates (*Dublin Hospital Gazette*, April 1, 1859), the following case of hydrocele successfully treated by the method suggested recently by Dr. Simpson, of Edinburgh.

Joseph K., aged 60, of healthy appearance, a clerk, was admitted into St. Vincent's Hospital, on February 28th of the present year, labouring under hydrocele of the tunica vaginalis of the right testicle. He stated that about two years ago he had suffered from hydrocele on the left side, that he had been admitted into St. Vincent's Hospital under the care of the late Dr. Bellingham, who performed the operation for the radical cure by injection with tincture of iodine with complete success. He continued free from the disease until about nine months ago, when the right side of the scrotum began to swell, and gradually increased, until it had reached its present size (about as large as a small cocoa-nut). He was desirous of having this hydrocele radically cured; but begged that, if possible, the cure might be accomplished by some milder method, inasmuch as the former operation (by injection) had been attended with great pain and much subsequent inflammation. Dr. Q. accordingly determined to try the introduction of iron wire.

"*Tuesday, March* 1. I passed a Liston's nævus needle through the depending portion of the hydrocele; and into its eye, which had come out on the opposite side, I inserted four iron wires (No. 32). I withdrew the needle, carrying through, of course, the iron wires doubled; and in this manner left the hydrocele perforated by a species of seton composed of eight strands of iron wire. I then knotted the wire with a pair of twisting pliers, and placed a folded towel under the scrotum for the purpose of absorbing the fluid, which had begun to drain away immediately on the introduction of the wires. This drainage continued the whole day, so that by evening the hydrocele was almost completely empty.

2*d*. The hydrocele slightly inflamed. Ordered a tumbler of strong punch in the afternoon, and to walk for a short time about the ward.

3*d*. The hydrocele considerably inflamed. It has almost regained its former bulk.

4*th*. The hydrocele greatly swollen and inflamed. Slight tenderness up the spermatic cord. Patient a little feverish. The wire seton removed by simply cutting it across with a pair of scissors and drawing it out. The right testis carefully strapped with adhesive plaster, and supported in an upright position.

8*th*. The right side of the scrotum much diminished in size. No pain caused by pressure. The testis and tunica vaginalis are of stony hardness, not the slightest fluctuation being discernible. The strapping reapplied according as the scrotum decreased. The parts gradually regained their natural state. When the patient was discharged the testis was still surrounded by the hardened envelop of the obliterated tunica vaginalis, a condition which, in all probability, will not disappear for some time."

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35. *Epilepsy, in which Castration was performed.*—Mr. C. Holthouse read before the Royal Med. and Chir. Society (Mar. 22, 1859) an account of a remarkable case of epilepsy, in which he castrated the patient, an operation which has excited much interest and comment abroad, and which we cannot but consider as indefensible. The author commenced his paper by citing ten cases of epilepsy, in which castration is said to have cured the disease. In the first case, the testicles were removed in consequence of disease of those organs. In the second case, one testicle was removed on account of an accident to the organ. Both patients were epileptic previous to the affection of the testicles; and their removal, though not done with the view of curing the epilepsy, incidentally did so. These cases were related to Dr. M'Kinley, of Tennessee, U. S., by a Mr. M'Gavoc, of the

British Navy, and are published in the *American Med. Gaz.*, July, 1855, along with seven other cases in which castration was performed for the express purpose of curing epilepsy. Of these seven cases, two occurred in the practice of Dr. M'Kinley himself; two in the practice of Dr. White, of Tennessee; two in that of Dr. Talbot, of Missouri; and one in that of Dr. Hacker, of Louisiana. The tenth case occurred in Germany, the operation having been performed by Holz, under the direction of Joseph Frank, and it is recorded in the *Praxeos Medicæ Universæ Precepta*, vol. ii. chap. 11. Mr. Holthouse stated that he brought his case before the notice of the society partly because the operation was not attended with the same favourable results as in the cases referred to, and partly for the purpose of removing the misapprehension which prevails in reference to it. The case of the patient, very nearly as taken by Mr. Ponsonby K. Adair, the house-surgeon of the Westminster Hospital, was then read; after which the author proceeded to state the grounds on which he was induced to operate in the following words: "Reasons which induced me to operate.—1. The patient's urgent request. 2. The simple and dangerless character of the operation. 3. The knowledge that epilepsy had been cured by castration. 4. The possibility, if not probability, that it might be in the present case. Lastly, I was further influenced by a consideration of the history of the case, which showed, first, that every remedy hitherto tried had failed; and, secondly, that there was a close connection between the origin and severity of the fits and the condition of the sexual organs. Whatever weight may be attached to the 2d, 3d, and 4th reasons, I confess I should not have felt myself justified in recommending a proceeding of which I had no personal experience, nor any knowledge of the individuals who had adopted it; but although these considerations would not have sufficed to make me recommend the operation, they had their influence in inducing me to consent to its performance. It will be obvious, then, that I was chiefly influenced by the wishes of the patient. The question, therefore, arises, how far may a patient's wishes as respects treatment be acceded to, and on what points must a physician or surgeon satisfy himself before acting on a patient's suggestion? The following seem to me to be essential: 1st, he must satisfy himself that the patient is of mature age; 2dly, that he is of sound mind, not the subject of hallucinations or a monomaniac; 3dly, that his proposition is not unreasonable; and lastly, that the remedy proposed is not a dangerous one. Now, the only points on which I apprehend there can be any difference of opinion are—1st, as to the sanity of the patient; and 2dly, as to the reasonableness of the treatment adopted. I shall, therefore, address myself to these two points. And first, as to the sanity of the patient, it has been asserted by many that the mere fact of the man having had epilepsy for so long a period was presumptive evidence that his mind was unsound, and the pertinacity with which he begged to be castrated was considered a sufficient proof that this opinion was not unfounded. Mania, I was reminded, sometimes takes this form, and lunatics have been known to castrate themselves. Now, I am free to admit that if such a desire existed, or such a request were made on the part of any individual without adequate motive, there would be legitimate grounds for believing that he was insane, or at least, labouring under an insane delusion. But was there no adequate motive in the present case? What are the facts? The patient is walking in one of the streets of New York, when he is stopped by a physician of eminence and repute, the editor of a medical journal, who informs him he has just received a communication from one of his correspondents, in which castration is recommended for certain forms of epilepsy attended with great venereal excitement, and that nine cases had been successfully treated by this method. The letter containing this announcement Dr. Reese reads to him, and advises him to submit to the operation, at the same time offering him an introduction to Prof. Parker, Surgeon of the Bellevue Hospital, and Professor of Surgery at the University of New York, and one of the most eminent surgeons in that city. A consultation is held between Dr. Reese and Prof. Parker, when the latter, having been made acquainted with the history of the case, and had his attention called to the cases published in Dr. Reese's journal, consents to perform it, and is only deterred from doing so by the interposition of a medical relative of the patient, who was of opinion that no benefit would result. From this period is

to be dated the desire of the patient to be castrated; and believing that he had at last found a remedy for his disease, is it to be wondered at that he should be earnest and urgent in his desire to avail himself of it?—that he should prefer the positive evidence of those who had tried the remedy, to the negative evidence of those who had not—the practical experience of the former to the theoretical considerations of the latter? Moreover, when he called to mind the origin of his fits—their recurrence on his first marriage, after they had been absent for the two preceding years—their exacerbation on his second marriage, as well as under any sexual excitement—and his frequent nocturnal pollutions—could he dissociate the fits from the sexual organs? And was not the fact of his thus associating them a proof rather of his sanity than of his insanity? I appeal to the candour of the society whether there is the least analogy between a man desiring castration under such circumstances, and the morbid craving for mutilation of a madman? I would further remark, that the removal of the exciting cause of epilepsy, as indeed of any other disease, has been long recognized as the established rule of practice; and, although it is not always possible to determine what this cause may be, I hold it to be generally admitted that we are justified in acting on a fair presumption of the cause, though such presumption must necessarily fall short of actual proof. Acting on this presumption, epileptic patients have been subjected to the dangerous operation of trephining, sometimes with and sometimes without success. Acting on such presumption, Wardrop cured a case of eccentric epilepsy, by removing a joint of a healthy finger. Tissot relates a case where a similar good result followed amputation of the great toe. Dr. W. H. Edwards, of Virginia, U. S., cites another, in which the leg was amputated a few inches below the knee-joint; and several similar or analogous examples are on record. It must be obvious, then, that in all of these cases the epilepsy was of eccentric origin, and that the great nervous centres were only affected secondarily and sympathetically. Now the whole history of the patient whose case forms the subject of this paper, pointed to the abuse of the reproductive organs as the original source and the subsequent exciter of the epileptic paroxysms; indeed, the early abuse to which they had been subjected had so increased their functional activity that they were habitually in a state of abnormal excitement, and this reacting on the brain prevented that repose of the organ so favourable, if not essential, to its recovery, and constantly tended to counteract the effect of other remedial agents. But I am assuming here that the brain is affected; and indeed, in so long standing a case, it would be absurd to suppose that this organ was not in some measure damaged, although it may not have been originally the starting-point of the disease. I am aware it may be objected that the excitement of the genital organs was the effect and not the cause of disease of the brain, and that the origin both of the fits and of the sexual excitement must be referred to cerebral disorder. Now, though it may not be possible to prove the negative of this, there are so many facts which demonstrate the influence of the reproductive organs over the cerebral functions, that it is no unfair inference to suppose they may have thus acted in the present case. I hold, then, that the removal of all extrinsic sources of excitement from a disordered brain is both reasonable and proper; and believing, as from the history of the case I was entitled to do, that the reproductive organs of this patient did exercise an injurious influence on his brain—seeing, moreover, that precedents were not wanting where the removal of the testicles, under like circumstances, had been attended with success—I say, taking into consideration all these circumstances, I maintain that the request of the patient was not unreasonable, and that it was perfectly justifiable to accede to his wishes. The results of the operation are, so far as can be judged of at present, certainly not such as the patient anticipated: the fits continue to recur with much the same frequency, and are of a similar character."

Mr. Solly said he saw the patient in St. Thomas's Hospital, where a consultation was held, and Mr. Simon was inclined to yield to the man's wishes, against the general feelings of his colleagues. He (Mr. Solly) suggested, that if any operation was performed, the spermatic artery should be tied on one side, and if that proved in any way successful, a similar operation might be performed on the opposite side. His reason for making the suggestion was, that castration

was by no means a harmless operation, or unattended with danger. The last patient whom Mr. Green castrated died within a short time after the operation.

Mr. HOLMES COOTE said that the patient, having enjoyed the hospitalities of the public institutions in France and Germany, might now be seen any day in St. Bartholomew's walking about and airing himself, in the conscious dignity of having been castrated. It appeared to him that the man was a monomaniac. In an institution with which he was connected, Bethlehem Hospital, if all the operations were performed which the patients desired there would be a strange collection of individuals. One man desired to have his throat cut; another wished to be hung, and a third cut off his penis. In the case of a young woman subject to erotic monomania, a surgeon consented, at her request, to excise the clitoris, with the same effect as in Mr. Holthouse's case. The disease was really in the brain, and could only be relieved in an asylum under proper supervision.

Dr. SCHULHOFF stated that eunuchs in the east were found to suffer from epileptic fits.

Dr. WEBSTER had no doubt that Mr. Holthouse's patient was of unsound mind, and the circumstance of his strong desire to be castrated he regarded as a striking indication of that fact. He did not think the surgeon was justified in performing the operation simply because the patient requested it. The statements of the American cases, however, appeared to be sufficient to justify the operation. Long-standing epilepsy was generally accompanied with unsoundness of mind.

Mr. ACTON said there were many instances recorded of *operations de complaisance*, so that Mr. Holthouse was not without precedents for his justification. He hoped, however, that surgeons would be prevented from performing an operation of the kind detailed, seeing that the results were so unsatisfactory. He wondered that no one appeared to have suggested the cauterization of the urethra, which some persons considered useful in such affections.

Mr. HALE THOMPSON had seen the patient in Westminster Hospital, and had no doubt of his insanity. Had he heard of cauterization no doubt he would have proposed it. He had heard more false logic in the paper than he had ever heard in the society before; and he suggested whether it would not be better to follow the rules of practice laid down by eminent surgeons in this country, rather than adopt ill-understood American eccentricities. When the operation was performed he (Mr. Thompson) protested against it, the testicles being perfectly sound, and left the theatre rather than sanction by his presence such a proceeding. The operation was not without danger, and the man suffered fearfully from hemorrhage for two hours.

Dr. OGLE believed the man to be a monomaniac, and he had seen a letter from Paris respecting him, in which it was stated "the physicians think him stark mad." With regard to the experiments upon the lower animals, it was found that if they were castrated before puberty, their sexual desire was entirely destroyed, but this was not the case if the operation was performed at a later period. Cases were on record in which children had been begotten after castration, and it was known that some eunuchs had harems of their own; and it had been stated that a monarch of Persia, finding that the removal of the testes from eunuchs did not destroy desire, ordered that the entire organ should be removed. Juvenal, also, in his sixth satire, had a passage in which he showed that the women were in the habit of indulging themselves with eunuchs.—*Med. Times and Gaz.*, April 2, 1859.

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36. *Extraction from the Pharynx of a Needle which had penetrated the Neck.*—Mr. J. J. MURRAY relates (*Med. Times and Gazette*, May 7, 1859) the following case:—

M. B., aged 44, having been drinking, quarrelled with her husband, who was also intoxicated. In a scuffle which ensued, he roughly seized her by the throat and pushed her from him; and this push caused a needle, which had been used to fasten the woman's shawl, to penetrate the skin of the neck. The entrance of the needle caused acute pain, and she screamed loudly for assistance. A neighbour entered the room, and, on uncovering the neck, found that the needle

was so far imbedded in the tissues that only its eye could be seen projecting through the skin. Her friends having been unsuccessful in their endeavours to extract the foreign body, she came to the hospital about half an hour after the accident had occurred.

On examining the skin of the neck, the point at which the needle had entered was found to be distinctly indicated by a dark spot, situated on a level with the space between the lower margin of the cricoid cartilage and the first ring of the trachea, and about three-quarters of an inch to the right side of the mesial line. This spot was surrounded by slight redness and swelling, and exhibited tenderness on pressure.

The patient talked incessantly in a drunken, maudlin manner, and often complained loudly of lancinating pain in the region of the neck: but when requested to indicate the exact locality in which the pain was felt, she seemed quite unable to do so.

Relaxing the muscles by position, we carefully examined every portion of the neck by palpation, but no indication of the presence of the foreign body could be detected. The trachea and chest were carefully examined by the stethoscope, and the respiratory sounds were ascertained to be quite normal.

On the whole, then, we were disposed to believe that the case formed one of that numerous class in which the sensation remains after the foreign body has been removed. The woman was therefore recommended to return home for the night, and to revisit the hospital on the following morning. Previous to her dismissal, however, the forefinger was passed far down into the pharynx, and on the left side of the lower portion of its anterior wall, both Mr. Dewar and myself distinctly felt a thin, hard, wiry substance, which might be the missing needle. The exposed portion was felt to be about three-quarters of an inch in length; and by pressing on it with the finger-nail, was ascertained to have both its extremities firmly fixed in the adjacent tissues.

The long curved forceps, which are generally considered suitable for the removal of such bodies from the pharynx or œsophagus, were quickly procured, and with these means, Mr. Dewar and myself made repeated attempts at extraction. To seize a small piece of thin wire, lying close to the lower portion of the anterior wall of the pharynx, was an operation of considerable nicety; but the seizure was rendered much more uncertain and difficult by the unruly condition of the patient. Once and again a portion of the needle was fairly between the blades of the forceps, which were forthwith firmly closed; but, on attempting to extract the needle, the forceps lost their hold. From the flattened form and great length of the blades of the common œsophageal forceps, they seemed unfitted to grasp, with any degree of firmness, such a small body as that now under consideration. A long pair of curved forceps, with strong handles and comparatively short blades, were therefore procured, and, with them I was fortunate in seizing the needle, which was first freed at one extremity, and then extracted by a slightly wriggling movement. The offending body proved to be a stout sewing-needle, two inches in length; it was slightly curved when extracted, but was otherwise uninjured.

As I supposed that the irritation, caused by the presence of the foreign body, and also by the means used for its removal, might give rise to inflammatory swelling in the pharynx, I sent the patient to bed, and ordered small doses of tartrate of antimony to be administered to her at intervals during that night and next morning. Twenty-four hours after the extraction of the needle, she returned home, at her own request. During the four following days she had slight dysphagia, and pain on the larynx being pressed against the bodies of the cervical vertebræ. Since that time she has been in perfect health, and free from all uneasiness.

In this case it is evident that the foreign body, after having penetrated the skin of the neck, had been forced onwards towards the pharynx by muscular contraction. Had the needle remained undetected, or unextracted, it might possibly have been afterwards ejected by vomiting. But, from the manner of lodgment in the pharynx, it seems much more probable that, if interfered with, the needle would either, 1, have maintained its position; or, 2, have again found

its way to the surface; or, 3, have been conveyed into the stomach; or, 4, have penetrated the chest.

1stly. That the needle could not have remained long in the pharynx without considerable risk to the patient's life is sufficiently shown by a case related by Mr. Joseph Bell, of Barrhead. A lad of eighteen years of age swallowed a sewing-needle in his food; and though he afterwards suffered considerable uneasiness in the right side of his throat, the accident was not considered to be of a serious nature, till, on the ninth day, he began to spit up mouthfuls of blood. On the tenth day great hæmatemesis occurred, and the patient expired a few minutes afterwards. On examination, the larynx and trachea were found to be filled with clotted blood, but no abnormal opening could be detected in their walls. The stomach was distended with dark coagulated blood. The pharynx was found to be transfixed, opposite the middle of the thyroid cartilage, with a fine sewing-needle, three inches long. The point of the needle had caused ulceration of the coats of the common carotid artery; and, through the opening thus made, blood had passed along the course of the needle into the pharynx. Mr. Bell very properly remarks that the timely extraction of this needle would, in all probability, have saved the patient's life.

Had it been found impossible to extract the needle by the mouth, in the case which forms the subject of this paper, the hospital surgeons would have been called on to decide whether other operative proceedings were warrantable, or at all advisable. But I may remark that Sir Benjamin Brodie has cautioned the surgeon against the apparently easy operation of cutting down upon a needle in the tissues. He had found from experience that ordinary pressure or manipulation in a wound may cause the needle to change its position, to slip out of reach, and so render extraction impossible. And he contends that "no attempts should be made to take needles out of the human body until they are close to the surface, and when with a light hand they can be felt under the skin."

2dly. The needle might have again found its way to the surface of the body; for it is well known that metallic substances, such as needles and pins, have been safely expelled in this way, after having coursed through the tissues during a long period.

In August last I extracted from a girl's foot nearly the whole of a sewing-needle, which had been present in the tissues during three years and four months, without causing more than occasional uneasiness; and, under similar circumstances, I have since then repeatedly had occasion to extract from the tissues portions of needles or other metallic foreign bodies.

Mr. M. gives brief notices of a number of interesting cases of various foreign bodies in different parts of the body.

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37. *Fistula in Ano.*—Mr. J. R. LANE read recently an interesting paper on this disease, before the Western Med. and Surg. Society. After a description of his views of the situation and mode of formation of the different kinds of abscesses which are followed by fistula, he expressed his opinion that it was erroneous to suppose that abscesses in the neighbourhood of the anus were all but certain to give rise to this complaint. That the great majority did so was undoubtedly the case; but he thought that if early and free incisions were more generally practised, permanent closure of the cavity, especially in cases of acute abscess, would frequently take place. He had met with cases repeatedly in which he thought a fistula was inevitable, but in which the incision had, nevertheless, healed soundly and rapidly. Of the three varieties of fistula, the complete was the most common; the blind external was next in order of frequency, and the blind internal the most rare. Of 68 cases upon which he had operated in St. Mark's Hospital during the last eight months, 46 were complete, 20 were blind external, and 2 were blind internal. Sir B. Brodie had maintained that an internal aperture was always to be met with if sought for in the proper situation, and would not therefore admit the existence of an external blind fistula at all. In the 20 cases alluded to, however, no internal communication could be found after the most careful search, not only with the probe, but also by injecting fluid with a small syringe into the sinus, which method would frequently, by the passage of the fluid into the bowel, demonstrate the existence of a communica-

tion, even when it could not be discovered with the probe. In operating on these cases an artificial communication had been established either with the bistoury or the director in the usual way, and all had healed soundly and well—a result which would scarcely have taken place had an internal aperture existed, and had he failed to include it in the incision. The position of the internal aperture of a complete fistula was, as now generally understood, almost invariably placed just above the sphincter muscle, although the sinus itself might often extend some distance higher up. The author had only met with three exceptions to this rule, and in these he had found it placed two inches or more within the anal aperture. In the cases in which the internal aperture was in the usual situation, but the sinus extending higher up, he had always found it sufficient to lay open the lower part of the sinus through the internal communication into the rectum, without meddling with the upper part. He thought it advisable, however, in such a case always to have a free incision through the sphincter muscle, in order that there might be a ready outlet for any matter that continued to be secreted. In the exceptional cases, where the communication was placed higher up, it was, of course, essential to include it in the incision.

After some further remarks on the operation for fistula and its after treatment, Mr. Lane referred to the association of fistula with phthisis pulmonalis, which he believed had been over-estimated. M. Andral's statement, that he had examined 800 persons with phthisis, and only found one who had fistula, was well known, and the author believed that phthisis, by its debilitating influence, might conduce to abscess and fistula, and, on the other hand, that the drain from the latter might accelerate the development of tubercle in those predisposed to it. Whether an operation for fistula should be performed in phthisical persons, he decided in the affirmative; for in some half a dozen cases of this kind, not only did the wound heal favourably, but a decided improvement in the health of the patient resulted. It had been stated that an indurated condition of the internal aperture was a characteristic of fistula in phthisical persons. He did not believe it to be a sign which could at all be relied on, having seen fistulæ with a perfectly smooth condition of both external and internal apertures in persons suffering from phthisis, and also a highly callous condition of those apertures in persons in whom there was no suspicion of pulmonary disease.—*Lancet*, April 23, 1859.

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38. *Bismuth in Gleet and Leucorrhœa.*—M. Gaby states that repeated trials have convinced him that injections of oxide of bismuth constitute the very best treatment of *gleety discharges*. Thirty parts are suspended in 200 of rose-water, and so injected as to leave as large a deposit of the salt as possible in the canal. Three injections *per diem* should be employed at first, and then fewer. He has collected 43 cases thus treated with success, five of which he briefly relates. *Urethral discharges*, unconnected with gonorrhœa, as observed in certain diatheses, in masturbation, venereal excesses, etc., and increasing in quantity even after pure connection, have been treated by this means in three cases. *Balanitis* and *balano-posthitis*, and *herpes præputialis* yield rapidly to bismuth, applied in powder after cleansing the part, and then covering with cotton. The various forms of *vulvar leucorrhœa* may be treated with bismuth. One of these is entirely confined to the vulva, whether appearing as a consequence of follicular vulvitis or without preceding inflammatory symptoms. The latter is often met with in little girls. Pregnancy, want of cleanliness, masturbation, worms, or contusion, are among the exciting causes. After removing all complication the bismuth acts upon the discharge like a specific. In the leucorrhœa of girls, powdering with bismuth is an excellent remedy. In ordinary vaginal leucorrhœa, occurring in women otherwise healthy and having no other affection of the genito-urinary organs, the bismuth succeeds well. The cases of *urethra vaginal* leucorrhœa are almost always of infectious origin. They have in some instances yielded to bismuth when resisting obstinately other remedies. It is to be remembered that all the cases in which the bismuth is useful are of the chronic description; and that pain and other signs of acute inflammation contra-indicate its employment.—*Med. Times & Gaz.*, May 28th, 1859, from *Bull. de Thérap.*, tome lv.

39. *Ozæna.*—Mr. ROBERT DRUITT makes (*Med. Times and Gaz.*, Oct. 23, 1858), some interesting practical remarks on this intractable and very distressing affection.

"The most common origin of ozæna," he remarks, "is neglected catarrhal inflammation, in patients of scrofulous habit; and when once established, the bones may participate in the diseased condition. There is a peculiar appearance of the nose, a thickening and quasi-*romanizing* of the nasal bones, so that the upper part of the organ looks broad and prominent, whilst the lower part has a sort of pinched or twisted appearance, which characterizes the early victims of ozæna. Moreover, there is that terrible aspect of scrofula, which Cullen describes, the swelled columna and alæ nasi, and the swinish pouting of the upper lip, which are realized to the full only in case of scrofulous ozæna.

But an ulcer accidentally produced in a scrofulous patient, and which is hindered from getting well, is one thing; a true scrofulous ulcer, a local organ of elimination of scrofulous poison from the blood, is another thing; the one may be difficult to cure in a given number of weeks, the other too often sure, under any treatment whatever, to drag on for months or years. Yet, whatever may be the ultimate duration of the malady, its most painful feature, the smell, may be at once brought under control, and the same means which accomplish this also relieve other most troublesome symptoms, and expedite the entire recovery.

"The ordinary history the patient gives, is, that in addition to the constant effluvium and nauseous discharge, he passes at times portions greater or less of clot or fleshy matter; that there is increased stuffiness, and often very acute pain just before the accumulation of these things, and some relief, possibly some bleeding afterwards. The sense of smell is generally lost, although that of taste remains.

"These symptoms may all be mitigated at once, by the use of a large syringe or India-rubber bottle; by means of which the nose should be resolutely sluiced out with warm water, containing ever so little of Burnett's or Condy's deodorizing solution; and this should be repeated often enough—sometimes once a week, sometimes twice or three times—often enough to keep the cavity free from discharge, and to deodorize any decomposing surface.

"As auxiliary measures, the citrine ointment diluted, the vapour of creasote, and other astringents may be of use; and of course such constitutional remedies as may be adapted to relieve any existing cachexia. Bark and nitric acid are my favourite remedies; but the iodide of potassium, cod-liver oil, etc., have their uses.

"It must be borne in mind further, that these ulcers have their spontaneous periods of aggravation and subsidence, and that a gorged condition of the alimentary mucous membrane is a sure forerunner of mischief. Whenever, therefore, the health has been a little better, and the appetite keener than usual, and the veins fuller, then is the time to guard against fresh exudations, and to administer a gentle purgative."

Some cases of syphilitic ulceration are also attended with ozæna, which arises from just the same conditions as it does in the catarrhal and scrofulous varieties.

The sum of the matter, Mr. D. states, is this: "Ozæna is an accidental complication of any suppurating or ulcerative disease of the nose.

"It is the tendency of muco-pus to accumulate; and it is the tendency of the mucous membrane of the nose, if ulcerated, to exude flakes and clots of lymph or false membrane, which matters putrefy, and cause the smell.

"If these putrefying substances be washed away, and the cavity kept clean, there can be no smell; and this process carried out, as I have described it, makes the patient at once more comfortable, and conduces to the radical cure of the ulcer, no matter what the first origin of that ulcer may have been. The requisite constitutional measures should, of course, be used at the discretion of the practitioner."

The following case is related by Mr. D., to show what the local treatment should be.

"A young lady, aged 20, consulted me for an offensive discharge from the left nostril, of twelve months' duration. It followed a cold in the head, which had been unsually severe, and attended with much pain in the bones of the face.

Since that time she had been much infested with nauseous taste in the mouth, stuffiness and obstruction of the nostril, and profuse yellow offensive discharge, sometimes streaked with blood. The stench of her breath was most unbearable. There was no tenderness of the nose nor any other outward sign of disease. Her appetite was bad, and spirits low, inasmuch as she felt herself a nuisance to her friends, and her family doctor had pronounced the case one of disease of the bones, and had prescribed some zinc ointment, which had done no good.

"I immediately caused the affected nostril to be syringed by means of a large brass syringe, with warm water, to which a few drops of Condy's disinfecting fluid had been added. Several syringefuls were used without any effect or any decrease of the odour; but after persevering a little longer, the patient blew her nose, and expelled a small fragment of yellow putty-like stuff—consisting evidently of pus, in that state of decay to which the name yellow, or cheesy-tubercular matter is applied. The syringing was proceeded with, and in the course of half an hour the nostril was completely emptied of quite a large quantity of this yellow stuff, the fetor of which was so terrible that it clung to the clothes of those present for some hours. The result was, that the nostril was entirely freed from smell, and although there was great irritation, and the eye was rendered very vascular and swelled, the patient expressed herself greatly relieved, and quite comfortable by comparison.

"On the following day the irritation had subsided, and there had been no return of ill odour. There appeared some swelling and excoriation at the anterior extremity of the turbinated bone. A small quantity of very dilute citrine ointment was directed to be put up the nostril with a hair pencil every night.

"On the eighth day she called, and reported that there had been no return of the ill odour. This case is a good example of its kind; accumulation of mucopurulent matter, following catarrhal suppuration, and keeping up a diseased suppurating state of membrane by its presence."

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40. *A Contribution to the Statistics of Cancer, collected from the Records of the Middlesex Hospital.*—Septimus W. Sibley, Lecturer on Pathological Anatomy at the Middlesex Hospital, read an interesting paper before the Royal Medical and Chirurgical Society (March 8, 1859), in which he presented the result of an examination of 519 cases of cancer, together with the records of 172 post-mortem examinations. The more recent cases had been reported with uniformity and with some degree of fulness; some of the older cases were less perfect. In the first place the diseases embraced within the limits of the paper are defined, and what had been excluded from consideration. A table is then given, in which the seat of the primary cancer in each of the 519 cases is exhibited. There were 103 instances in the male, and 416 in the female; amongst the latter there were 191 of breast, and 156 of uterine cancer.

The ages of the patients are next stated. There were three examples under the age of ten (all males), and one between the age of ten and twenty. Tables are given, in which the ages are arranged in decennial periods, the cases of breast and of uterine cancer being placed in separate groups. The average age of those attacked with uterine cancer was 43.28 years; with breast cancer, 48.6.

Effect of marriage, pregnancy, &c.: Of the female cancer patients, 83 per cent. either were or had been married, and amongst the single women the disease occurred oftener in the breast than in the uterus. Of the married women, 86 per cent. of the uterine, and 74 per cent. of the patients with breast cancer, had borne children. The average number of the births was 5.2 among the former, and 3.89 among the latter. The interval between the last pregnancy, and the proportion attacked before and after the cessation of the catamenia, are also given.

The duration of life (from the first discovery of the disease), in patients who had not been operated on, varies greatly in the different classes of cases. In the breast it is 32¼ months; in the uterus, 14; in the stomach, 8½; in the rectum, 34; in the lip, face, &c., 53; in the penis, 34½; in the bones, 10; in the labium, 29. These figures are not perfectly comparable, as in some cases, especially the external cancers, the period given is the entire duration of the disease,

whilst in others (as in the stomach) the period is only that during which the symptoms were present.

An account is then given of the operations (by the knife) in cases of cancer of the breast. Three patients out of 60 died from the effects of the operation. The average duration of life of those who were operated on was 53.2 months. In comparing this with the duration of life in cases in which the disease was allowed to run its natural course (32.25 months), it should be remembered that the cases submitted to operation are more or less selected ones.

As to the hereditary nature of the affection, the difficulties in obtaining accurate information upon this point are first alluded to. The chief of these is the very imperfect knowledge which most people, but more especially hospital patients, possess of the diseases to which their relatives have been subject. Out of 305 cases, in which the point had been particularly inquired into, 34 patients remembered to have had a relation affected with cancer. A table is given of the seat of the disease in each of the 34 cases, in 17 of which the breast was the part affected. Tables are also given, in which the degree of relationship of the cancerous relative is shown, and also the proportion affected on the father's and on the mother's side. Out of the 34 cases, in six more than one relative was cancerous, and in one instance (the chief features of which are mentioned) no less than five relations suffered from cancer.

The existence of phthisis in different members of a cancerous family is also adverted to. This disease existed in 50 families out of 130. Similar tables to those before mentioned are given, in which the degree of kinship is exhibited; it being also noted whether the disease was on the father's or the mother's side.

The notes of the 172 post-mortem examinations are next analyzed. In the first place, a table is given, in which the seat of the primary cancer in each instance is exhibited. The cases are then arranged in the following groups: 1. Cancer of the breast. 2. Cancer of the uterus. 3. True cancer of other organs. 4. Epithelial cancer. A series of tables follows, in which the secondary cancers are enumerated, and the cases arranged as follows: *a*. The disease strictly local. *b*. Involving also the lymphatics of the part. *c*. Involving the lungs and other parts, the liver being unaffected. *d*. The liver cancerous, the lungs being free from this disease. *e*. Those cases in which there were tumours in distant parts of the body, but both the lungs and liver were free from the disease. Moreover, in each form of the affection, a list of the non-cancerous diseases found in the bodies of the cancer patients is appended.

The bearing of the foregoing facts on the mode in which cancer is disseminated throughout the body is next alluded to, three distinct modes of multiplication being recognized: 1st, the growth of tumours in the immediate neighbourhood of the cancer; 2d, the development of cancer in the lymphatics of the parts; 3d, the formation of cancerous tumours in distant parts of the body.

In regard to the cachexia, it was noticed that this condition only became developed as the ulceration and sloughing extended, and could not be attributed to pre-existing changes in the condition of the blood of the patient. In nearly all instances, the patient died from the ordinary effects of ulceration, or from the interference with vital functions.

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41. *Statistics of Lithotomy.*—Drs. JAS. A. LAWRIE and GEO. BUCHANAN publish (*Glasgow Medical Journal*, April, 1859) the statistics of lithotomy operations performed in the Glasgow Royal Infirmary since its foundation in 1795.

From the tables given, the following results are obtained:—

"Lithotomy has been performed in the male in 159 cases, with 23 deaths. Proportion of deaths to cases, 1 in 6.913.

The ages of the patients and results are as follows:—

At and under 5 years	50 cases.	3 deaths.
From 5 to 10 years	34 "	2 "
From 10 to 15 years	11 "	1 death.
In all under 15 years	95 "	6 deaths.

Proportion of deaths to cases under 15 years, 1 in 15.83.

From 15 to 20 years	14 cases.	5 deaths.
From 20 to 30 years	15 "	5 "
From 30 to 50 years	14 "	0
Above 50 years	14 "	3 "
In all above 15 years	57 "	13 "

Proportion of deaths to cases above 15 years, 1 in 4.384.

The ordinary lateral operation, in one or other of its modifications, has been performed 107 times, with 18 deaths. The operation with a rectangular staff, devised by Dr. A. Buchanan, has been performed 52 times, with 5 deaths. The following are the particulars of the cases which were treated by the two methods respectively:—

	The ordinary lateral operation occasionally modified to suit particular cases, as noted in the table.		Dr. A. Buchanan's Rectangular Method.	
At and under 5 years	28 cases.	1 death.	22 cases.	2 deaths.
From 5 to 10 years	24 "	1 "	10 "	1 death.
From 10 to 15 years	7 "	1 "	4 "	0
In all under 15 years	59 "	3 deaths.	36 "	3 deaths.
Proportion of deaths to cases,	1 in 19.6.		1 in 12.	
From 15 to 20 years	9 cases.	4 deaths.	5 cases.	1 death.
From 20 to 30 years	12 "	4 "	3 "	1 "
From 30 to 50 years	9 "	0 "	5 "	0 "
Above 50 years	11 "	3 "	3 "	0 "
In all above 15 years	41 "	11 "	16 "	2 deaths.

Proportion of deaths to cases above 15 years, 1 in 3.727; and by the rectangular method, 1 in 8.

In 7 additional cases of the lateral, the ages are omitted from the record; of these 4 died.

Proportion of deaths to total cases, lateral, 1 in 5.94; rectangular, 1 in 10.4.

It must be remarked that the above synoptical table does not give a true estimate of the relative success of the lateral and rectangular methods of operating. The column of 'lateral operations' ought rather to be entitled 'operations other than rectangular;' for a glance at the statistical tables will show that it includes various methods, even the old operation with the gorget. Of late years, however, it has always been performed with the curved staff and lithotomy knife; and in order to compare its success in this its simple form with the rectangular method, the most correct plan would be to take No. 211 in the table, and count back fifty-two cases, tabulating them as above; or, perhaps, a more exact estimate might be obtained by comparing equal numbers at the respective ages. This, however, is beyond the scope of the present paper, and probably the data are not sufficiently extended for too rigorous a comparison.

From the tables it appears that lithotrity has only been performed in 7 cases, and of these 3 died."

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42. *Causes of Death after Amputation.*—Thomas Bryant, Assistant-Surgeon, and Surgical Registrar to Guy's Hospital, read a paper on this subject before the Royal Med. and Chirurg. Soc. (Feb. 22d, 1859). The author, after having made a few preliminary observations, stated that his paper was based upon an analysis of 300 cases of amputation, collected from the records of Guy's Hospital. He had divided them into four classes; and although he had not thought it necessary to alter the ordinary division of traumatic amputations into primary and secondary, he had made some change in the division of the other forms; for it became evident, in the analysis, that the classing together of such cases as amputation for talipes, tumours, elephantiasis, deformity, and others of a like character, with those of diseases of the joints, a wrong result must en-

sue; and, practically, this was found to be the case. He therefore divided these cases into pathological amputations and amputations of expediency, choosing the latter term as more accurately expressing the reason for the operation, as limbs are removed for tumours, talipes, elephantiasis, and deformity, more from expediency than necessity; and he therefore suggested the use of such a term until a better was proposed.

The author then proceeded to an analysis of the table of amputations, including

167 cases of pathological amputations,
33 " amputation of expediency,
76 " primary amputations,
24 " secondary amputations;

and having given in detail the analysis of each division, he summed up the whole in the following general conclusions:—

1. That in amputations of the extremities, taken altogether, 25 per cent. are fatal; 30 per cent. in the lower extremity, and 10 per cent. in the upper.

2. That amputations, as a whole, are fatal in the following order: secondary, 50 per cent.; primary, 43 per cent.; amputations of expediency, 30 per cent.; pathological amputations, 12.5 per cent.

3. That in pathological amputations of the
Thigh, 18 per cent. are fatal, or 1 in 5.5;
Leg, 7.7 " " " 13;
Foot and upper extremity, success generally follows.

4. That in amputations of expediency of the
Thigh, 31.5 per cent. are fatal, or 1 case in 3.16;
Leg, 66.6 " " " 1.5;
Upper extremity, fatal cases are exceptional.

5. That in traumatic amputations of the lower extremity, 60 per cent. are fatal; of the upper, 18 per cent.; and that traumatic amputations of the leg are, at least, as fatal as those of the thigh.

6. That secondary amputations are more fatal than primary.

7. That in amputations of the thigh for chronic disease of the knee-joint, 1 case only out of 7 proves fatal,[1] or about 14.5 per cent.; but for acute suppuration, a fatal termination is the rule.

8. That in amputations of the lower extremity for tumours, 36 per cent. are fatal; of the upper, recovery may generally be expected.

The author then proceeded to the more immediate subject of the causes of death after amputations; and having given two tables, showing the different causes of death, and their proportions or percentages both to the fatal cases and the whole number of amputations, he went on to the analysis of each division, and having given a detailed account of each, he condensed the whole into the following conclusions:—

General Conclusions upon the Causes of Death in Amputations generally.—

1. That 25 per cent. are fatal.
30 per cent. of the lower extremity.
10 per cent. of the upper.

2. That pyæmia is the cause of death in 42 per cent. of the fatal cases, and in 10 per cent. of the whole number amputated.

3. That exhaustion is the cause of death in 33 per cent. of the fatal cases, and in 8 per cent. of the whole number amputated.

4. That the following causes of death are fatal in the annexed proportions:—

	Of fatal cases.	Of whole number.
Secondary hemorrhage . . .	7 per cent., or	1.66 per cent.
Thoracic complications . . .	5.6 "	1.33 "
Cerebral " . . .	3 "	.66 "
Abdominal " . . .	1.4 "	.33 "
Renal " . . .	3 "	.66 "
Hectic " . . .	3 "	.66 "
Traumatic " . . .	7 "	1.66 "

[1] The fatality of excision of the knee, according to Butcher, is at least 1 case in 5.

Pathological Amputations.—1. That pathological are by far the most successful amputations, 12.5 per cent. proving fatal. Such amputations of the upper extremity are generally followed by success. Of the lower extremity, 15 per cent. terminate fatally.

2. That pyæmia is the chief cause of death, proving fatal in 43 per cent. of the fatal cases, and in 5.4 per cent. of all pathological amputations; and when fatal, as a rule, it causes death within fourteen days of the operation.

3. That exhaustion, either from the shock of the accident or of the operation, from hemorrhage, or all three causes combined, is the cause in 33 per cent. of the fatal cases, or 4 per cent. of all amputations.

4. That secondary hemorrhage is the fatal cause in only 9 per cent. of the fatal cases, and in 1.4 per cent. of all amputations.

5. That hectic, abdominal, and thoracic complications act equally as causes of death in 13 per cent. of the fatal cases, and in 2 per cent. of all amputations.

Amputations of Expediency.—1. That 30 per cent. are fatal; but as amputations of the upper extremity are, as a rule, successful, the percentage of this operation upon the lower is much increased, 40 per cent. proving fatal.

2. That pyæmia is the chief cause of death, proving fatal in 60 per cent. of the fatal cases, and in 18 per cent. of all such amputations; and when fatal, as a rule, death takes place within fourteen days of the operation.

3. That death from exhaustion occurs in but 10 per cent. of the fatal cases; and that some thoracic or renal complication, or carcinomatous infiltration, are fatal causes in the same proportion.

Primary Amputations.—1. That 43 per cent. are fatal; 60 per cent. of the lower extremity, and 30 per cent. of the upper.

2. That primary amputations are more successful than secondary.

3. That pyæmia is the cause of death in 43 per. cent. of the fatal cases, and in 16 per cent. of the whole number, and that, when fatal, the symptoms appear, as a rule, between the seventh and fourteenth days after the operation, and cause death in the third or fourth week, and not during the first two weeks, as in pathological amputations and those of expediency.

4. That exhaustion is the cause of death in 32 per cent. of the fatal cases, and in 12 per cent. of the whole number.

5. That traumatic complications prove fatal in 15 per cent. of the fatal cases, and secondary hemorrhage, cerebral or thoracic complications, about 7 per cent. each; renal disease proving a cause of death in 3.5 per cent.

Secondary Amputations.—1. That 50 per cent. are fatal; 68 per cent. of the lower extremity, and 12.5 per cent. of the upper.

2. That secondary amputations are more fatal than primary, by about 8 per cent.

3. That exhaustion is the chief cause of death, proving the cause in 60 per cent. of the fatal cases.

4. That pyæmia is the cause in 25 per cent. of the fatal cases; secondary hemorrhage and hectic in the remaining 15 per cent.

Conclusions upon Pyæmia as a Cause of Death.—1. That it is the cause of death in 42 per cent. of all fatal cases of amputations, and in 10 per cent. of all amputations.

2. That it is the cause of death in the different forms of amputation in the following order:—

1. In 70 per cent. of all fatal amputations of expediency.
2. In 43 " " primary amputations.
3. In 43 " " pathological "
4. In 25 " " secondary "

and that in amputations of expediency it is the most frequent cause, and in secondary amputations the least.

3. That in amputations for acute suppuration of the knee-joint, whether the result of an abscess discharging into the joint or otherwise, pyæmia is a more frequent cause of death than in amputations for chronic disease.

4. That it is the general cause of death in amputations for talipes, elephantiasis, and tumours.

5. That in primary amputations, and in amputations of expediency of the leg, it is a more frequent cause of death than in the same operations upon the thigh.

6. That, upon the whole, pyæmia appears to be a more frequent cause of death in amputations through limbs the tissues of which are in a normal condition, and where a large surface of healthy bone is exposed.

7. That in pathological amputations, and in amputations of expediency, pyæmia, as a rule, proves fatal within fourteen days; but, after traumatic amputations, the period of death is about the twenty-fifth or twenty-sixth day.

General Conclusions upon Amputations of the Thigh.—1. That 27 per cent. are fatal.

Pathological amputations,	18	per cent.
Amputations of expediency,	31	"
Primary amputations,	60	"
Secondary "	75	"

2. That in amputations of the thigh for chronic diseases of the knee-joint, about 15 per cent. are fatal, or 1 case in 7.

3. That amputations of the thigh for acute suppuration in the joint are generally fatal; and that pyæmia is the chief cause of death in these cases.

4. That exhaustion and pyæmia are causes of death in equal proportions, or in about 40 per cent. of the fatal cases; and in 10 per cent. of all amputations of the thigh.

5. That exhaustion is most fatal in primary amputations, and the least so in amputations of expediency.

6. That pyæmia is most fatal in amputations of expediency, and the least so in primary.

7. That primary amputations are, for the most part, fatal from exhaustion; 35 per cent. of the cases sinking from this cause, 15 per cent. from pyæmia, and secondary hemorrhage and traumatic complications 5 per cent. each.

8. That exhaustion, pyæmia, and hectic are equally fatal causes in secondary amputations, proving fatal in 25 per cent. each.

Amputations of the Leg.—1. That 37 per cent. are fatal.

Pathological amputations,	7.7	per cent.
Amputations of expediency,	66.6	"
Primary amputations,	62.5	"
Secondary "	66.6	"

2. That amputations of the leg are 10 per cent. more fatal than of the thigh; the amputations of expediency and traumatic amputations being more fatal, and the latter more frequent.

3. That amputations of expediency of the leg are generally fatal, being twice as fatal as those of the thigh; that pyæmia is the chief cause of death in 75 per cent. of the fatal cases, and in 50 per cent. of all such amputations.

4. That in primary amputations, pyæmia is the cause of death in half the fatal cases, or in 32 per cent. of all such operations; exhaustion and visceral complications about 8 per cent. each.

5. That comparing primary amputations of the thigh and leg together, they are equally fatal; but that pyæmia is twice as fatal in amputations of the leg as in amputations of the thigh.

6. That half the cases of secondary amputations die from exhaustion; pyæmia and secondary hemorrhage being fatal in 8 per cent. each.

7. That taking all amputations of the leg together, 42 per cent. of the fatal cases die from pyæmia, and 32 per cent. from exhaustion.

Amputations of the Upper Extremity.—1. That 10 per cent. are fatal.

2. That pathological amputations and those of expediency are, as a rule, successful.

3. That about 20 per cent. of traumatic amputations are fatal; 22 per cent. of the arm, and 16 per cent. of the forearm.

4. That one-third of these fatal cases die from pyæmia; one-third from some traumatic complication; and the remaining third from secondary hemorrhage or visceral disease.—*Med. Times and Gaz.*, March, 5, 1859.

43. *Dislocation of the Shoulder Joint.*—Mr. T. Bryant, Assistant-Surgeon to Guy's Hospital, has published (*Med. Times & Gaz.*, May 14, 1859) some interesting remarks on this subject, based on 34 cases which have come under his observation. The following are his conclusions:—

1. The necessity to make an early and correct diagnosis.
2. That the head of the humerus may be dislocated in any position downwards, backwards, and forwards, these directions being the only possible ones into which the head can pass.
3. That dislocation downwards is by far the most common form; and dislocation backwards the least.
4. That a direct blow upon the shoulder is by far the most frequent cause of dislocation.
5. That dislocation of the humerus is more common in old people than in young and middle aged.
6. That it is most frequent in men.
7. That reduction is comparatively an easy task under the influence of chloroform.
8. That spasm of the muscles is not the principal impediment to the reduction of the bone; but that the lacerated capsular ligament may be regarded as the chief obstacle.
9. That simple extension with the heel in the axilla, when the patient is under the influence of chloroform, is generally sufficient to reduce the bone; in many cases the treatment by manipulation as described will be followed by success.
10. That up to six or seven weeks the chances of reduction may, as a rule, be considered good.
11. That reduction may be effected at any period after two months, but the chances of success are small.
12. That in old people, when the bone has been dislocated some weeks, and fair mobility exists, it is hardly expedient to attempt reduction.
13. That in old cases, and in others where reduction by extension or manipulation has failed, the treatment previously described of steady and constant pressure upon the head of the bone, by the adaptation of an air-pad to the axilla, should be employed; as being simple it can do no harm, and may succeed in other cases as well as in the example given.

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44. *A peculiar Vascular Tumour of the Rectum.*—Mr. R. Quain read before the Royal Med. and Chirurg. Society (May 24) a paper, the object of which was to describe and to discuss the nature of a tumour of the rectum, of which the author has found no account in books. The chief characters of the growth are its vascularity and the absence of hardness, the surface being studded over with thick papillary vascular prominences of various shape. These, in fact, form the chief and most characteristic part of the mass. The tumour had no connection, except with the mucous membrane of the bowel, from which it was an outgrowth. The author believes the disease not to be malignant, and he grounds his judgment upon the history of cases, upon a comparison with other cases, and upon the result of the examination of the structure of the tumours he removed in practice.

Mr. Spencer Wells alluded to the case of a female patient, similar to that recorded by Mr. Quain, which had been treated by him at the Samaritan Hospital. At first it was considered that there was stone in the bladder, but after careful examination, no calculus could be detected. There was a considerable loss of blood, some ounces being lost after every time she passed water. When the patient came under his care, he put her upon gallic acid; the bleeding diminished for a time, but came on again, and she became rapidly blanched, sinking into a dangerous condition from repeated loss of blood. He then employed a sponge-tent, in order to dilate the urethra; and on passing his finger into the bladder, he found a soft villous growth, about the size of a large strawberry. He cut it away with a pair of curved scissors; the symptoms were at once relieved, and the patient perfectly recovered. He had seen her lately, and there had been no relapse. He thought this bore out Mr. Quain's suggestion that the villous growth of the mucous membrane differed entirely from

those villous cancers described by Dr. Schuh, of Vienna. So far as he knew, the case he had alluded to was unique.

Mr. HENRY LEA witnessed a case some two or three years ago, which was very similar to that related by Mr. Spencer Wells. It was a case of hemorrhage from the bladder. After death, a villous projection was found growing at about half or three-quarters of an inch from the surface of the bladder, and having the terminal vessels ragged.

Dr. O'CONNER remembered a similar case to Mr. Quain's, in the Royal Free Hospital. The patient complained of a profuse discharge from the rectum; she was carefully examined, and a tumour was found within the rectum. It was successfully removed, and no return of the hemorrhage took place. He might add that no chloroform was administered, and that the tumour was removed with ease. The age of the patient was about 38 years.—*Med. Times & Gaz.*, June 4, 1859.

OPHTHALMOLOGY.

45. *Iodide of Potassium in the Treatment of Iritis.*—While some surgeons maintain that the iodide of potassium is altogether inefficient in the treatment of iritis, others with equal confidence assert that all cases of this affection may be perfectly cured by it.

J. C. WORDSWORTH, Esq., Assistant Surgeon to the Royal London Ophthalmic Hospital, has published (*Med. Times & Gaz.*, May 28th, 1859) some observations on this subject, which accord with the results of our own experience, and which appear to us to be well worthy of attention.

An extensive trial of iodide of potassium, has led him, he says, "to the conviction that a safe and speedy cure of iritis can generally be effected by it alone; but it must be admitted that instances occur, now and then, that resist its influence, and can only be subdued by the administration of mercury in addition. On the other hand, it may be safely stated that a combination of both will often accomplish a cure in less time, and at less sacrifice, than either mercury or iodide of potassium alone. I have known iritis occur when the patient has been under the specific action of mercury, and at once subside on giving the iodide of potassium. In other cases, the disease has appeared during a course of the iodide, and succumbed to mercury. I have, therefore, been led to adopt the plan of combining the two remedies, when I have found that either does not quickly produce the desired effect. It has occasionally happened that a considerable augmentation of pain has ensued on the use of the iodide; and in other instances, where it alone has been adopted, though all the other symptoms of the disease have rapidly subsided, the impairment of vision has continued for some time; under these circumstances, I have administered a few doses of mercury with decided advantage.

"As a matter of experience, as well as of theory, I should be indisposed to trust to the iodide alone, when the exudation exhibits a tendency to organization by assuming the nodular form, or by closing the pupil, and so leading to synechia or opaque capsule. Perhaps, too, as a rule, its sole use should not be adopted, if possible, when vision is from the outset of the attack much compromised.

"I have observed on many occasions a decided advantage follow its use, when the skin has quickly become affected by scaly or papular eruptions.

"On the other hand, it has seldom succeeded if there has been much prostration of strength or syphilitic cachexy; and in rheumatic iritis, bark and soda, or quinine will be generally more efficient, when the disease is associated with debility.

"In conclusion, then, I believe that the iodide of potassium cannot supersede mercury in the treatment of iritis, though it affords an excellent substitute in cases for which mercury is not admissible, either through some idiosyncrasy of the patient, or when the specific influence of the mineral has been already

attained; that in others, its combination with mercury will greatly expedite the recovery, and save the patient from the necessity of such a prolonged course of mercury as would seriously compromise the general health; and lastly, that in a large proportion of these cases the iodide will of itself suffice to effect a cure, especially when assisted by leeching and blisters."

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46. *Sympathetic Inflammation of the Eye.*—Mr. Haynes Walton remarks (*Med. Times & Gaz.*, March 12, 1859) in regard to this condition that "If the direct inflammatory effects of the injury are quickly got over, the chances of the other eye ever suffering from irritation are immensely lessened. If inflammation lingers, many of the tunics are involved, pathological changes ensue, and the other eye is threatened.

"But what are the symptoms of dangerous sympathetic implication? Intolerance to light. Some form or other of impaired sight is the next bad omen. Loss of focal adjustment; incapability of sustaining the focus on minute objects; loss of definition, generally called feeble sight; abundance of muscæ, spectra flashes, stars, coruscations, pain, together with inflammatory action; loss of pupillary movements; a change of iris colour, and softening of eyeball are the later manifestations. The danger of sympathetic implication continues so long as the excitement produced by traumatic disease lingers, and the excitement may be so slight, and of such long duration, as likely to escape observation. A member of the Harveian Society, Mr. Wall, called me to a patient whose left eye was fast failing in the manner described, without any very apparent cause. The other eye had been wounded two years ago with a packing-needle, the cornea torn across, and sight destroyed. Occasional paroxysms of pain and tenderness under touch, convinced me that sympathetic disease was at work. I acted in the manner to be described with perfect success. The eye was completely restored.

"Drugs have no influence in removing or even checking the sympathy. Many eyes are sacrificed in abortive attempts with medicines. The traumatic disease must be subdued by removing the eyeball, or reducing it. Fortunately, the latter course will generally suffice, as the centre of the morbid action, or the intensity of it, is more commonly near the seat of injury, and therefore in front of the eyeball. When it is beyond this, for the most part indicated by general enlargement, or staphyloma scleroticæ, either the entire contents of the diseased globe must be evacuated, or extirpation adopted. I find it difficult to understand how it is, that the smallest quantity of pus, a drop or two just behind the cornea, or a slight change of texture of some of the tissues of the eye, can exert so baneful an effect."

In regard to the manner of operating, Mr. W. says as regards reductions, the principle should be always borne in mind, "that the less the eyeball is reduced, the less will be the deformity, and the better fitted the stump for an artificial eye, should one be desired. In more than two-thirds of the cases I have operated on, I have made my incision a line or two behind the cornea, whereby the iris, or whatever part of it remained, has been taken away. The eyelids having been retracted, transfix the cornea or the staphyloma corneæ, as it may be, with a cataract-needle or a curette, and make the incision with a small scalpel, as gently and rapidly as possible. Should the lens be present, whether opaque or not, I remove it. If I find the vitreous humor healthy, I try to prevent its escape by gentle manipulation and rapid closure of the eyelids, and sometimes none of it is lost. If it be otherwise, I would rather some did run away. What should follow is important. There is no more necessary step in the whole proceeding, and without it there may be copious bleeding and suppuration in the stump. Cotton, wool, or what is next best, a pledget of lint, should be quickly placed in the closed eyelids—maintained by a bandage, and kept on for two or three days. The more the eye generally is diseased, the quicker, and the more copious is likely to be the bleeding. The source of blood is not the central artery of the retina, as is generally supposed, but the vessels of the choroid. The stump heals by the cicatrizing of the cut surface, and its rapidity depends on the healthiness of the vitreous humor. It is not unusual to find it sealed up at the end of a week or ten days.

"I pass to the excision of the entire eyeball. I know that this is often unnecessarily done, when partial removal will suffice. I have been told that it is preferable solely because of the risk of bleeding that attends the other operation. I have shown how hemorrhage is to be entirely prevented; but let me inform you that in extirpation, I have seen bleeding from the ophthalmic artery that needed a firm compress to check. The distressing unsightliness that it occasions should deter one from resorting to it from choice. It renders the adjustment of an artificial eye difficult, and it is impossible that the false member can have the movements which are requisite to complete the counterfeit.

"As to the plan of executing it, the proper way is to remove the diseased eyeball alone, and not the other contents of the orbit, by dissecting it from its cellular sheath, as proposed almost simultaneously by Dr. O'Ferrall and Monsieur Bonnet. By it much bleeding is avoided, and the parietes of the orbit not being stripped, there is less chance of dangerous inflammation. The commissure of the eyelids is to be divided, although this is not always necessary, the conjunctiva cut through, the attachments of the recti and oblique muscles severed, and the scissors passed along the sheath of the eyeball, and the optic nerve divided."

When it is clearly ascertained that the wounded eye is decidedly lost, and that the secondary action, which is tolerably sure to be suppurative, is attended with pain and constitutional disturbance, Mr. W. judiciously advises that a portion of the eyeball be removed (a mere incision will not answer), or excision after Bonnet's plan be adopted. "Possessing," he remarks, "such means for safe and instantaneous relief, and by which besides, the greatest protection is afforded to the other eye, we ought not to allow a continuation of suffering and prostration which no other treatment will check, and which ceases only after certain consecutive morbid changes in the lost organ."

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47. *Foreign Body in the Vitreous Humour; Extraction; Recovery of the Eye.*—An exceedingly interesting and very unusual case has recently been treated by Mr. Dixon at the Ophthalmic Hospital, in which a foreign body was safely extracted from the centre of the vitreous chamber. Its details are briefly as follows:—

A healthy-looking man, aged 24, by trade a cooper, applied at the Hospital on the morning of December 2d, having just before received an injury to his left eye from a chip of steel, which broke off the edge of a chisel which he was using. A small wound, which had perforated the upper lid just above the margin of the tarsus, marked the spot where the metal had entered, and corresponding with this was one in the tarsal conjunctiva. There was a small gaping wound in the sclerotic, about a line distant from the uppper edge of the cornea. It thus seemed probable that the fragment had lodged itself within the globe. The pupil was active, and division nearly perfect. On examining with the ophthalmoscope, a clot of blood was distinctly seen hanging down from the wound, and waving to and fro behind the lens. Just below the optic entrance was a small round body, resembling a globule of clear lymph. As the foreign body had not been detected, no operation for its removal could of course be thought of. The eye was treated in the usual plan, being covered with cotton-wool, and lightly bandaged.

A week after the accident, on making a second examination with the ophthalmoscope, Mr. Dixon discovered the foreign body. It had evidently been concealed behind the iris, as it floated suddenly in view during a quick turn of the head. Having been once found, it was seen with the greatest ease, as well without the ophthalmoscope as with it. It hung, pendulum-like, almost in the axis of the eye, suspended by two or three threads of clot, which had their attachment to the cicatrix of the wound above. It moved from side to side with the greatest freedom.

The important question as to treatment now arose. The man's vision, despite the injury the globe had sustained, and the presence of a foreign body in its centre, was almost perfect. Could it be expected to remain so? Was it not probable that the immunity from inflammation hitherto observed was due to the position of the foreign body suspended in the middle of the vitreous and at a

distance from any sensitive structure? Was it not to be expected that the slender filaments, by which this immunity was secured, would before long give way? When they did so, and the bit of steel fell down on to the retina, would it not be certain to set up irritation? Taking all these circumstances into consideration, Mr. Dixon determined to at once attempt its extraction. Long examinations were made as to how best the foreign body could be kept in view, and finally it was decided to operate with the man sitting in a chair before a good light, the head being a little thrown back so as to let the object to be seized fall away from the lens. The lens, it must be borne in mind, was uninjured and perfectly transparent. The incision in the sclerotic was made below at a considerable distance from the cornea, and was large enough to allow of the free introduction of a pair of fine iris forceps of peculiar construction. The quantity of vitreous which escaped was not large. Some difficulty, owing to the impossibility of keeping the foreign body in sight, was experienced in seizing it, but at the third introduction of the forceps it was brought away in their grasp. It proved to be, as had been supposed, part of the edge of a chisel, and was a tenth of an inch long, and weighed a quarter of a grain. Immediately after its extraction the lids were closed with plaster.

No undue inflammation ensued on the operation, and the wound rapidly healed. The lens had not been injured, and retained its perfect transparency. A fortnight after the operation the man could see to read small type. About a month later, when an ophthalmoscopic examination was made, the deep structures of the eye were found to be perfectly healthy, and the only remnant of the effects of the accident was a single opaque filament floating in the vitreous.—*Med. Times & Gaz.*, March 26, 1859.

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48. *Mechanical Injuries to the Eyeball.*—Mr. Haynes Walton, in a recent paper (*Med. Times & Gaz.*, March 12, 1859) gives some judicious cautions against meddlesome examinations in cases of this kind.

"Effusion of blood," he remarks, "is the common consequence of a severe injury to the eyeball. It always exists when there is rupture of the external coats, and the danger of its presence is in proportion to the quantity effused in the posterior part of the eye.

"Adaptation as nearly as may be of divided parts—slight sustaining pressure—local and general rest—are the things indicated, and the objects to be accomplished. When I see a patient sufficiently soon after an injury, I make no further examination than is needed to ascertain its nature, to be assured of the line of action required, and to be able to form a tolerable prognosis. Taking care to exclude all extraneous substances, I close the eyelids, and retain them shut by one or two strips of court-plaster, which fulfils the first two indications—adaptation and slight sustaining pressure, with the great addition of excluding the atmosphere. When the accident is severe, I enjoin rest of body and disuse of the other eye. The quicker the union of the wound, the more certainly is the desired object gained, the more perfect the result, and the less the suffering.

"It is positively hurtful to apply stimulating lotions. Swelling of the conjunctiva, chemosis, as it is called, is the inevitable result of an injury, and readily passes away. The frequent use of cold water, or a cold lotion applied with a rag sufficiently thin to allow of evaporation, is most advantageous, and if much pain exist, the addition of some preparations of opium will generally afford relief. Sometimes warm applications are more grateful, so that the use of either must often be discretional.

"I resort now more frequently to the internal use of opium than in the earlier years of my practice, but I give it in very much smaller quantities, and repeat the dose often; so that although in the end I might prescribe as much, I am sure that I obtain a far better result. I affect the patient's system sufficiently, and keep it so influenced, without that knock-down prostrating result so likely to follow the large dose. I have met with cases in which nothing short of the local abstraction of blood would give ease.

"I learned in the operations for the extraction of cataract and for artificial pupil, how much is to be gained by not opening the eye for at least a week after it had been incised, and that knowledge I apply here. I am wholly unaware of

a single object that is to be gained by an earlier inspection, or one from day to day, as have been advocated by some surgeons. If matters are doing well it is not needed, and if any untoward events supervene, their existence is always manifested in appearances of the upper eyelid, and then it is, more than at any other period, that opening the eye is likely to be hurtful. Usually I do not remove the plaster for a week, and then I prefer that the patient should of his own accord, and after the tarsal margins have been duly cleansed, open the eye. The act is then devoid of suffering. The application of the surgeon's fingers is very apt, where there has been much lesion, to produce pain, and that often of long duration.

"But what is to be done when the iris is more or less prolapsed through the cornea, or perhaps through the sclerotica? The latter state is the more common. The sclerotica is more easily ruptured than the cornea, and the giving way is generally close to the attachment of one of the recti muscles. Most assuredly, as a rule, the less that is done the better. But very seldom, indeed, can it be necessary to interfere. I have a very few times thought it prudent, from the amount of the prolapse, from the very large bit that was hanging out, and to lessen irritation, to reduce the flap with a pair of scissors; but I repeat, that in general nothing of the kind is needed. By a natural and a safe process, whatever is superflous and not wanted in the progress of plugging and cicatrization is removed. The application of nitrate of silver cannot be beneficial. I know that it destroys primary cicatrization, and besides, increases inflammatory action, so that it is doubly hurtful. I say this after much investigation of the subject and a thorough conviction. In ulceration of the cornea the iris often protrudes in a bladder-like form, being pressed forwards by the aqueous humor. It is often advantageous to puncture the protrusion and produce collapse. I have not, so far as I remember, met with a parallel example from an injury.

"Constitutional treatment must not be neglected, and all measures likely to reduce chronic inflammatory action, I include even mercury carefully and judiciously given, must be adopted if a case calls for it."

Mr. W. properly cautions the surgeon not to let any extent of injury, short of actual collapse, destroy hope of restoring the eye to some degree of usefulness.

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49. *Cataract in Association with Diabetes.*—Mr. FRANCE relates (*Ophthalmological Hospital Reports*, Jan., 1859) the following cases, with a view of directing the attention of the profession to a complication and apparently a cause of cataract, but cursorily alluded to by authors.

Some years ago, while Dr. Babington was one of the medical staff of Guy's Hospital, a patient, about middle age, was admitted under his care for diabetes; and was undergoing treatment for that complaint when attention was drawn, in a fresh direction, by the failure of the man's sight. I was consequently requested to see him; and upon examining the organs of vision found that opacity had, without assignable cause, arisen simultaneously in both crystalline lenses, the capsules remaining clear. The cataracts were evidently soft, as indicated not only by their rapid formation, but also by their large bulk, and irregularly opalescent aspect.

This was the first case of cataract, in the peculiar relation in question, which I had encountered; and considering the extinction of useful vision, the probably indefinite duration of the urinary malady, the fair state of general health in other respects, and the opportunity of repose which a residence in hospital afforded, I was induced to recommend operation, and performed keratonyxis accordingly. No benefit, however, accrued; the corneal puncture remained unhealed, and fistulous for a long time; the aqueous humour, draining away as soon as secreted, could not act as a solvent on the lenticular substance; and hence, although the attempted remedy did not awaken any active inflammation, no diminution of the cataracts, and no improvement of vision resulted up to the time when the patient quitted the hospital and was lost sight of. The case could scarcely be quoted as an infraction of the fundamental law of physic *saltem non nocere;* still, in the most favourable point of view, the issue was negative, and taught distinctly enough the necessity of great caution in the treatment of similar cases.

The next example which I have to adduce was not under my own care; it enforces still more strongly the lesson derived from the preceding case.

Rebecca F., aged 48, came within my observation in May, 1845. She was a thin, feeble person, who had been suffering from diabetes for some time; the specific gravity of her urine was 1045. Both eyes were affected with cataract, and had been much in the same condition for four months previously. The opacity was principally, but not exclusively, seated in the deeper strata of the crystalline on each side; and consequently, from the natural colouration of that body at this age, presented an amber tint, imparted by the more transparent layers in front. The capsules were healthy, the pupils active, and the degree of vision quite proportionate to the remaining permeability of the lenses to light. The right cataract, which was the more advanced, was selected for operation; and the surgeon, perhaps mistaking its yellowish colour for an indication of hardness, pierced the sclerotic for the purpose of depression. This, however, proving impracticable—for the needle passed freely through the soft texture of the lens—the point of the instrument was brought forward through the pupil, the capsule opened, and the cataract freely divided. One operation sufficed; but not for cure. My last note, taken two months afterwards, states that the iris had become universally adherent, and the pupil contracted, and blocked up.

The next case occurred in the clinical ward of Guy's, from the records of which it is abridged; and the medical features and history are in consequence more fully detailed than in either of the preceding instances.

Harriet B., aged 19, a domestic servant, of fair complexion, light-brown hair, and blue eyes, living at Southampton, was admitted under the care of Dr. Addison, on October 11, 1854.

Up to two years previously she had enjoyed good health, and was a stout hearty girl; but about that time she caught a severe cold from exposure in washing, and was compelled to quit her situation exceedingly ill. Shortly after this she first began to pass large quantities of urine. The catamenia had been established when she was fifteen years of age, and had continued regular up to the period of her illness, but had not appeared since. She was free from chest affection, and of a healthy family.

On her admission into the hospital there was found extreme emaciation of the whole body; the skin was hot and dry; she experienced great thirst, voracious appetite, and frequent swelling of the legs. There was a slight hectic flush on either cheek. The pulse was small, but regular, 104; the tongue red, moist, tolerably clean, but fissured; and the gums were spongy.

The pupils of the eyes were dilated and indolent. Vision had become impaired for the last three or four months, and had progressively deteriorated; so that she was now unable to work at her needle by candlelight or bright daylight. The urine averaged from about a gallon to a gallon and a half per diem; was of a pale colour, peculiar sweet odour, not albuminous, of a specific gravity 1032, and contained a large quantity of sugar.

Mr. France, by request of Dr. Addison, examined the patient's eyes on October 17th, and found both pupils dilated and inactive. They were occupied by large, irregularly opalescent, cataracts; which, by their great bulk, protruded the irides in a convex form, and seemed to impede their motions by direct mechanical pressure.

The patient remained in hospital some months, on account of the diabetes; but eventually left of her own accord, as the report states, unimproved. The cataracts, in the meantime, became more completely opaque, and all useful vision at last extinguished. Palliative treatment only, by belladonna collyria, was adopted for the ocular affection.

The last case I have to narrate, in illustration of the present subject, occurred among my own out-patients at Guy's. The existence of the parent disease, diabetes, was not intimated by the patient; it was only ascertained upon special inquiry, prompted by the resemblance which struck me, between the aspect of the cataracts in this individual and that presented by the cases of the same complication which I had previously witnessed. The woman merely applied for relief to her failing sight; but upon the verification of my suspicion, the following account was kindly taken by our late house-surgeon, Mr. McDougal:—

Martha A., aged 30, a print colourer, of fair complexion, residing in Walworth, became an out-patient, under the care of Mr. France, on the 19th of June, 1857. She was married; had had four children, and had habitually enjoyed moderately good health, with the exception of occasional attacks of rheumatism. Her family were in general healthy, and there was no evidence of a syphilitic taint. About four years previously to her application at Guy's, and three months after the birth of her last child, she had had rheumatic fever, and subsequently began to suffer from extreme languor and debility, feverishness, pain in the back, cramp in the legs, and swelling of the lower extremities.

She was troubled with an abundant secretion of urine, and frequent micturition; her appetite and thirst became inordinate, and the former perverted. About eighteen months before admission the catamenia ceased entirely; and the cutaneous surface, which had usually been moist and perspirable, now became continuously dry and parched. The thirst and voracity of appetite increased; her tongue became arid and cracked, the fauces dry, the teeth were gradually eroded and broke off; she suffered from palpitation and faintings; her bowels became excessively costive, and the stools scybalous and black. The urine grew still more copious; was pale and frothy when first passed, and after a while deposited a thick, white, sticky sediment, which incrusted the utensil, the orifice of the meatus, and the adjacent parts.

About four months before applying at Guy's, she first perceived impairment of the sight of the right eye, and in a short time vision became completely extinguished. Two months afterwards the left eye began to suffer in the same manner, and soon was also blind. On presenting herself at the hospital, she was only able to appreciate light and passing shadows with either. On examination, the tunics of the eyes were found healthy; but the aqueous chambers were rendered shallow in consequence of the irides being pressed towards the cornea by large, soft, lenticular cataracts, which occupied the entire area of the pupillary apertures.

The urine was pale, frothy, copious, without any particularly sweet odour; but proved to contain a large amount of saccharine matter, on the application of both Moore's and Trommer's tests. Its specific gravity was 1040. This patient, perhaps discouraged by overhearing her condition spoken of unfavourably, did not continue her attendance at the hospital.

I shall add but few remarks to the foregoing cases. There can, apparently, exist no doubt as to the dependence of the cataracts upon the diabetic malady; in fact, the occasional connection between the two diseases has been observed before. But why the connection, if real, as I believe, and not a mere coincidence, is so seldom comparatively exemplified; and what is its nature—beyond the mere general statement that it has relation to the nutritive function, which throughout the body is affected in diabetes—I am not prepared to explain. It may be observed, however, that this complication is probably of more frequent occurrence than is suspected; and that the few illustrations, which, having noted circumstantially, I have been in a position to relate in this paper, are not (unless my memory deceives me) all which have fallen within the scope of my own individual experience.

This brings me to speak of the characters which the cases in question have displayed, and which have been sufficiently uniform to enable me to recognize the last instance as one of their category, before any complaint of urinary disorder was preferred by the patient. The cataracts have in every example been symmetrically developed on both sides; the lenses have increased remarkably in their antero-posterior diameter, so as to encroach upon the depth of the anterior chamber, and even to interfere mechanically with the free play of the iris. The opacity has attacked portions of several strata of the crystalline at once, leaving intermediate spaces for a while transparent. The colour and bulk of the cataracts have invariably indicated their soft consistence, which was proved by operation in two persons, though respectively of "middle" and of forty-eight years of age. Lastly, the ocular affection has only arisen after a considerable duration of the renal malady (a circumstance which may tend in some degree to account for the comparative rarity of their union); and there has, in no case, been reason to suspect further disease of the eyeball.

In conclusion, I must advert to the proper treatment of this class of cases. My experience would lead me strenuously to deprecate any operative interference with them, so long as a useful degree of vision is preserved; and to adhere to palliative treatment by mydriatics for a longer time, than in ordinary cases of cataract would be expedient or right. This recommendation is chiefly founded on the indisposition of the cornea to heal even the minute wound inflicted by a needle, as illustrated by the first of the above examples. A period, however, arrives, when all useful vision is extinguished; and then, unless the general powers are rapidly failing, there can be no doubt of the duty of attempting to afford relief. Depression (if not on other grounds to be discountenanced) would be clearly inapplicable here, as indicated by the uniform signs of softness, and as established by the second case, wherein the needle, introduced to effect this operation, passed smoothly through the very centre of the cataract. Extraction, even linear, is forbidden; for the reason just assigned against early operation, if the evidence afforded by Case 1 is entitled to any weight.

There remain, therefore, only the varieties of the operation for solution available, and I should have no hesitation in again selecting keratonyxis by preference to any other mode. In performing it, the surgeon should be more than usually scrupulous, to employ a needle of the greatest delicacy; to make sure that the shaft will completely fill the aperture made by the point; to confine his first manipulations to a narrow area in the centre of the capsule; to effect his purpose at that spot steadily, in as brief a time as may be; and carefully to withdraw the needle, with the flat surfaces of its point as they were introduced, parallel with the plane of the iris, and thus to avoid the minute crucial wound otherwise necessarily inflicted. The neglect of these precautions, by permitting escape of the aqueous humour, would probably render the whole process abortive. Had they been fully observed in the first case narrated above, its issue might have been different; but they were not at that time recognized by surgeons as essential in a well-executed operation on an ordinary case; nor, of course, in one of the particular class we are considering. When, however, the diminution in the normal quantity of the aqueous solvent—demonstrated by the advance of the iris towards the cornea; the pressure to which that remaining quantity is subjected; and the doubt, whether an external communication with the chamber, once opened to the humour, will ever be sealed against it by the healing process, are regarded by the light which the case just alluded to affords; the extreme, the vital importance of these minutiæ, under similar circumstances, becomes at once apparent.

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50. *Chloroform in the Operative Surgery of the Eye.*—Dr. S. A. Cusack read before the Surgical Society of Ireland (April 9th) the following observations on this subject.

"While chloroform has been since its discovery almost universally employed to alleviate the pain and facilitate the performance of all other surgical operations, the question still remains undecided, whether it is an assistance, or the reverse, in cases affecting the eye, more particularly in the operations for the removal of cataract, in which its administration is, so far as I have observed, the exception to this general rule. It is not very difficult to understand why this should be so, when it is remembered that, on the one hand, operations on the eye are not considered to be so painful as on other parts of the body, and, on the other hand, that certain grave objections have been made to the administration of chloroform in these cases, sufficient, I admit, to deter from using it, those surgeons who, confining their attention to this special department of medical science, have not learned its value by having constant recourse to it in other surgical operations. Of late years it has been the custom with many hospital surgeons to operate upon such eye cases as may come before them without drawing any line of demarcation between them and diseases affecting other parts of the body. Acting upon this principle at Steevens' Hospital, I have been in the habit, during the last three years, of using chloroform in ophthalmic cases as invariably as in amputations or any other operations, and with as satisfactory results. As, however, the experience of many other surgeons

has not coincided with my own, I think the question is one particularly suited for discussion in a Society such as this.

"Before mentioning the circumstances which have contributed to my own very favourable experience of the administration of chloroform, it may be desirable to consider in detail the arguments which are used against its adoption.

"1st. It has been stated that the patient has not the necessary power of directing the eye while under the influence of chloroform, and that the cornea may be turned upwards and inwards to such a degree as not to be controlled by the fingers of the surgeon—an event quite sufficient to prevent the necessary flap being made for extracting the lens; this, I admit, at first proved a serious objection to its use. Last year, however, a very convenient method of fixing the eye, by holding the conjunctiva in a forceps, was described by Mr. J. F. France, in the fourth volume of the Guy's Hospital Reports, and, with the assistance of this contrivance, I find that the difficulty is completely obviated; indeed, I may take the present opportunity of stating, that in extraction of cataract, and every other operation upon the eye that I have lately performed, I have adopted Mr. France's plan, which I believe to be one of the greatest modern improvements in this department of surgery.

"2d. It is objected that vomiting may take place during or after the operation, and cause displacement of the flap or ejection of the vitreous body. In answer to this objection I can state that, during the last three years, I have paid particular attention to this point in the surgical practice of Steevens' Hospital, and have never seen it occur in the case of operations on the eye, and only in two other instances in which the patient had transgressed the rules of the hospital by having breakfast before the operation. This fortunate state of things I attribute to the circumstance, that our operations are performed early in the morning when the stomach is empty of food—a condition which, looking at the question in a physiological point of view, can only be insured when sleep has intervened between the last meal and the operation, as otherwise food may remain undigested for many hours in the stomach, from the mental disturbance which a patient must necessarily experience before any operation.

"3d. It is argued that extraction of a lens through the cornea is not a very painful operation. Admitting, however, this to be the case, the fear of an operation is almost as bad as the reality; and I have observed patients to dread this operation as much as any other, notwithstanding the assurances of the surgeon that it would be attended with but little pain, and I have had some cases in which the patient refused to submit to the operation for the extraction of cataract without chloroform. The iris is admittedly a sensitive part, and its division in the operations for artificial pupil is always attended with considerable pain. Lastly, as our object is not only to prevent sensibility to pain, but to procure perfect quietude on the part of the patient, it is necessary to continue the inhalation until the patient is in what the late Dr. Snow has called "the third degree of narcotism," when there is no longer any voluntary motion or perception of pain, and any rigidity of the muscles or spasm which takes place in certain subjects has passed away. The operation should be performed of course while the patient is in the recumbent position; and, so far as my experience goes, there will be much less risk of ejection of the vitreous body or any other untoward event than when he is able to struggle or attempt to close his eyelids before its completion. The patient should either be removed to his bed before he has recovered from the effects of the chloroform, or be left upon the operating couch for some hours.

"Dr. JACOB had no doubt that the operation could be performed under the influence of chloroform, but he also knew from experience that it could be performed well, without the patient being under any such influence. He believed the state of the question to be this: that they had not before them sufficient evidence to enable them to judge as to the necessity or expediency of resorting to the use of chloroform. Looking back to a long experience of operations, such as breaking up the lens, artificial pupil, and things of that kind, he was disposed to say 'no chloroform.' He would rather deal with a patient having his ears open to receive his directions as to the way in which he should turn his eye, thus lending him his aid towards conducting the manipulation, than with

a comparatively lifeless being. As to difficulty of performing any needle operation without the assistance of chloroform, he never had any: he had not yet met the patient that he could not command with the needle in the cornea; and in the progress of the operation, he had unquestionably derived a great deal of aid in many cases from the patient being conscious and capable of bringing his eye into the exact position required. Even in cases of artificial pupil, which required great delicacy of manipulation, and nice handling to adjust the eye to the instrument, he rather inclined to the belief that it was in general safer to trust to the resolution of the patient than to the effects produced by chloroform: still he did not want to assert anything positive until they had further opportunities for testing the matter. One patient would hold his eye as if it were fixed in a vice, and make no effort or struggle, so that the operation could be accomplished with perfect success; whereas, in others, the eye oscillated under the needle, and left it scarcely possible to catch the opportunity of pushing the point of the instrument into it; of course, with a patient of that kind, it would be better to administer chloroform. Having been long aware of the difficulty of managing some persons, especially in cases of artificial pupil, he never ventured to take any step without first trying the steadiness of the patient by placing the handle of the needle against the globe, some days before the operation. He was not objecting, however, to chloroform, but to its indiscriminate use; in some cases it is desirable, while in others it is preferable to avoid it; but at the same time, he must repeat that he never met with a patient whom he could not command with the needle, in operations for cataract, even in the case of infants or grown-up children; and with a resolute resisting boy, if his hands were secured, the moment he fixed the point of the instrument in the cornea, he defied him. In cases of extirpation, chloroform was most desirable, especially if there was a probability of a continuance of very painful manipulation; yet here, again, he might be prejudiced against the use of chloroform in eye operations, inasmuch as the first case in which he employed it, he had a narrow escape of killing the man, and from that day up to the present hour he was timorous as to its use.

"Dr. Jacob said that, in extraction, it was very probable the operator could get the eye of an unsteady patient into a better position under the use of chloroform; but they all knew that the difficulty in such cases was the danger of subsequent sickness, which caused the loss of many an eye, and especially where the iris suffered much pressure or injury. He had seen several operations spoiled in consequence of vomiting, and how far chloroform might add to that amount of risk he did not pretend to say, inasmuch as he had not given it the requisite trial. In hospital practice they frequently met with clumsy fellows who would resist and struggle, but even with such persons he would rather undertake the operation, free from the influence exercised by chloroform. In private practice persons were easily restrained by their friends and could be safely relied upon when impressed with the necessity of keeping steady. To that extent consisted the difference between chloroform and no chloroform in cases of extraction. He might wind up his remarks by repeating, that he believed there were certain cases in which it was desirable, and others in which it was exceedingly objectionable."—*Dublin Med. Press*, April 27, 1859.

MIDWIFERY.

51. *Retrocession of Labour.*—Dr. Charien directs attention to the fact, that at any period of pregnancy, but particularly during the latter months, labour may commence and proceed regularly, so far as that the os uteri is opened up so considerably as to put the projecting bag of membranes on the stretch, and yet not only does complete rest recur, but the retrogression is so complete, that the os uteri closes again till some weeks after, when the labour begins afresh, and proceeds uninterruptedly to its close. In evidence of this, he cites four

cases: The first occurred in the Obstetrical Clinique at Paris. A woman, eight months pregnant, was seized with regular pains; the os uteri opened to the size of a five franc piece and was soft; towards evening the water came away; during the night the pains continued regularly, but at 4 A. M. ceased entirely; the os uteri gradually closed, and, by the following evening, was quite shut. Twenty-one days after, the labour set in anew, and proceeded regularly to its termination. In the second case, the birth took place 32 days, in the third 35 days, and in the fourth 22 days, after the first occurrence of labour.

(Professor Streng relates a remarkable instance of this retrogression of labour in the case of a woman brought to his clinique, with true labour pains, the os uteri dilated to about the size of a groschen, with distinct tension of the projecting bag of membranes, and considerable hemorrhage from a lateral insertion of the placenta; to subdue this, injections of cold water, with the subsequent addition of muriate of iron, were successfully employed, and the patient strengthened by cordials; but the pains then ceased entirely, the os uteri closed, and the birth did not take place till eight days after, when it occurred naturally.) Such observations encourage the attempts to subdue premature labour, the best means for which are perfect rest in the horizontal posture, and the use of narcotics, as opium, *per anum.*—*Ed. Med. Journ.*, May, 1859, from *Prager Vtljschft.*, 1859, Bd. i.

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52. *Physiology and treatment of Placenta Prævia.*—Dr. ROBERT BARNES, in a paper read (April 6, 1859) before the Obstetrical Society of London, related some recent cases illustrating these points. The author sought to avail himself of the foundation of the Obstetrical Society of London to elicit the experience of its members as to the different principles of treatment of placenta prævia. He submitted fourteen cases which had come under his own care since the publication of his work on the subject; and appended two series of propositions—the one physiological, the other therapeutical—which appeared to be either proved or illustrated by those cases.

Among the physiological propositions were the following: That in many cases of placental presentation, there arrives a stage when the hemorrhage is spontaneously arrested. That this physiological arrest is not owing to pressure upon the bared surface of the uterus by the bag of liquor amnii, or the child; nor to death of the child; nor to syncope; nor to total detachment of the placenta. That this physiological arrest of the hemorrhage is observed when that part of the placenta which had been implanted within the cervical or lower zone of the uterus has been all detached, contraction of the uterus attending. That, this stage reached, there is no physiological or pathological reason why further detachment of placenta seated within the middle and fundal zones should occur until after the expulsion of the child, when—and not till then—the remainder of the placenta is cast off as in normal labour. That the position of the greater portion of the placenta to the posterior wall of the uterus in these cases, where it forms, by resting on the projecting promontory of the sacrum, a solid inclined plane, directed forwards, is a frequent cause of the transverse presentations which are apt to complicate placenta prævia. That in the great majority of cases where an edge of the placenta comes down to the os internum uteri, the umbilical cord springs from this edge, and thus is ready to fall through into the vagina, should the os not be occluded by the child's head.

Amongst the therapeutical propositions were the following: That owing to the high vascularity and development of the lower segment of the uterus, resulting from this part being the seat of the placenta, uterine inflammation and puerperal fever are exceedingly likely to ensue from the pressure and contusion attending the passage of the child. That this danger is much increased by the forcible introduction of the hand for the purpose of turning and extracting the child before the os uteri has expanded. That in some cases, where it is observed that the placenta has been separated spontaneously from the lower segment of the uterus, the os being expanded to the size of a crown-piece, and the hemorrhage having ceased, it is not necessary to interfere with a labour now become natural *quoad* placental attachment. That since the os internum uteri must expand to the diameter of the child's head, and since, during the dilatation,

placenta adhering to the lower segment is liable to successive detachment, causing hemorrhages, it is an indication to expedite this stage of the labour as much as possible. That in some cases the ordinary means of inducing contraction—such as rupturing the membranes, plugging the cervix, ergot or galvanism—will suffice to cause the rapid and safe expansion of the os. That the adhesion of placenta to the lower zone of the uterus impedes the regular progress of labour, and delays the equable expansion of the os uteri. That in those critical cases where forced delivery or the artificial total detachment of the placenta are dangerous or impracticable operations, the introduction of the index finger through the os, and the separation of the part of the placenta adhering to the cervical zone, is a safe and feasible operation.—*Med. Times & Gaz.*, April 16, 1859.

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53. *Scarlatina after Delivery.*—Dr. Fleetwood Churchill, read before the Association of the King and Queen's College of Physicians the following interesting cases:—

Case I.—December 14, 1858, sent for to Mrs. S., and received the following history: A delicate lady, suffering a good deal during pregnancy, taken in labour of her fifth child December 13, and was delivered early in the morning, after an easy labour of a few hours. Placenta came away naturally; no hemorrhage; pulse quiet and good.

During the day she went on quite well; lochia natural.

In the evening Dr. Smith found the pulse alarmingly quick and very weak, without anything to account for it. No pain; no local distress; no excessive discharge.

Dr. Jacob, of Maryborough, was sent for, but nothing local or general could be ascertained with any certainty to account for it, unless it might be the commencement of a latent form of uterine phlebitis. Some calomel had been given on this supposition, but was suspended on account of diarrhœa. Nourishment and wine were liberally given, with benefit to the pulse and strength. The next day, December 14, I was sent for, and arrived at 10 P. M., the report at that time being that the patient was rather better. I found that there had been no rigor; there was neither enlargement of the uterus nor tenderness of it, or any part of the abdomen; no swelling; no tympanitis; lochia plentiful but rather pale, and not offensive; urine copious, and passed naturally; pulse 140, very weak and wavy. Upon minute questioning, she told me that she had neither pain nor distress of any kind. Countenance pale, but calm and easy; neither hurry nor distress in breathing, alæ nasi quiet; no headache. I examined the chest very carefully; on percussion it was resonant everywhere; respiratory murmur full and equable; not an abnormal sound throughout. Upon examining the heart there was no enlargement, but the rhythm of the sounds was destroyed by the disappearance of the first sound; there was no impulse, but the second sound was natural.

This, then, was the only deviation from the healthy condition that I could detect, after a most careful examination of every organ of the body. And what explanation did it afford of the perilous condition of the patient? I confessed that explanation I had none to give; all I ventured to say was, that the uterine system was not in fault, but that the disease was in the heart or circulating fluid.

I lay down about 2 o'clock, and at 5 A. M. the Doctor came to me to say that the pulse had begun to sink again. I found her in precisely the same condition as before, with that exception. The pulse was 150 or 160; the respiration rapid, but not difficult; and, in spite of strong stimulants, her state went from bad to worse, until she lost the power of swallowing, became insensible, and finally died about 11 A. M., without pain, struggle, or convulsion.

I returned to town, I may frankly confess, very much puzzled, and by no means comfortable; but the mystery was cleared up when I heard, two or three days afterwards, that the nurse and the lady's husband were laid up with a very severe form of scarlatina. I have no doubt that the scarlatina poison, acting on a system weakened and rendered usually susceptible by delivery, had caused death before the ordinary symptoms of that disease had time to develop themselves.

Let us now pass on to—

CASE II.—On February 23d Surgeon Morgan asked me to visit Mrs. B. with him. She had been confined, February 21, of her thirteenth child, after a natural labour, and was doing well until the morning of the 23d, when she awoke with palpitation and a weak pulse of 140, but without pain.

I found the pulse 130, and very weak. There was a nervous tremulousness about her, and a frightened look. She complained of nothing but excessive weakness; no pain, no distress. The uterus felt rather larger than usual, but not tender; lochia quite natural, and without odour. Some milk in the breasts. On examination the lungs appeared perfectly healthy, and there was no abnormal sound in the heart, but the first sound was weaker or less loud than the second.

In short, we could find no satisfactory local cause for the patient's condition, and in fact, no deviation from organic health, except in the rhythm of the heart. Remembering the former case, I asked if any of the family had recently had scarlatina or measles, but was told that they had not. Under such absence of grounds for correct diagnosis, it was clear that our duty was to treat the prominent symptom (exhaustion) actively, whilst we took some precautions as to certain possibilities.

This we did by the exhibition of stimulants and nutriment, and by poultices to the abdomen. Without troubling the Society with the daily report, I may briefly state that the patient became weaker on the 24th and 25th; at noon of which day Dr. Morgan thought she was dying. No local derangement could be detected at any time, and she took freely, and retained, both food, spirits, and medicine. Her nights were rather restless, and her sleep not refreshing. On the evening of the 25th we determined to try the full exhibition of quina, and accordingly gave her six grains at bedtime, and three grains every three hours when awake.

The next day there was a perceptible improvement; she had slept better, and felt more comfortable. The pulse was only 120, though weak. The quina, claret, and Hoffmann's liquor were continued.

February 27. A more decided improvement. Pulse 116, fuller and firmer; feels stronger, and had no weakness at noon, as previously. As she complained of headache and singing in the ears, the quina was omitted, but food and wine continued.

On the 28th I found her so much better that I ceased my attendance. She had slept very well; pulse 104, and fuller; no local distress; no feeling of excessive weakness. From this time Dr. Morgan informs me that convalescence progressed favourably.

Up to this point we were at sea as to the nature of the attack, although we had the benefit of Dr. Corrigan's assistance; but on the evening of the 28th I think the solution of the problem was afforded by the fact of one of the servants showing unmistakable evidence of scarlatina.—*The Dublin Quarterly Journal Med. Sci.*, May, 1858.

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54. *Hypertrophy of the Heart during Pregnancy.*—In 1826 and 1827, Dr. LARCHER determined, from the results of 130 observations made at the Maternity Hospital of Paris, that the left ventricle is enlarged during pregnancy. There was not a single exception to the rule in the 130 cases examined. Twenty years later Dr. BEAU investigated this subject anew. At his request, M. Ducrest, Interne of the Maternity, carefully examined the question in 100 cases, and his results fully confirmed the views of Dr. Larcher, who laid down as a law: That there was a coincidence between hypertrophy of the heart and of the uterus during pregnancy.—*Med. Times and Gaz.*, May 7, 1859.

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55. *Exomphalos, in which the Gravid Uterus formed the Hernial Mass.*—Mr. MURRAY related to the Obstetrical Society of London (April 6, 1859) a case of this, which he believed to be the first on record, and to possess features of great interest and importance. The patient was a woman, aged thirty, the mother of three children, and had been from infancy affected with a small umbilical hernia, which had always been easily reduced. When on the eighth month of gestation

she found one morning, in rising suddenly from the recumbent position, that a large tumour had forced itself through the navel. This protrusion proved to be nothing less than two-thirds of the impregnated uterus, the fœtus being distinctly recognized by palpitation. There was no rupture of the linea alba. Reduction was at once effected by means of gentle and careful manipulation, and the organ was happily kept *in situ* until the end of gestation, when a live female child was born. Mr. Murray quoted two or three cases from Boivin and Burns, which were somewhat analogous, but differed from the present case, inasmuch as the central tendinous cord had in them always yielded or divided; and concluded by observing that the fact of the uterus being subjected to some amount of handling at this late period of gestation without producing labour, was interesting.—*Med. Times & Gaz.*, April 16, 1859.

56. *On Hypertrophic Elongation of the Neck of the Uterus in Prolapsus Uteri, improperly so called, and on its Treatment by Amputation of the Neck of the Uterus.*—M. Huguier, surgeon to the Hôpital Beaujon, Paris, maintains that the ordinarily received opinion is erroneous, viz., that the appearance of the os uteri at the vulva, or of a greater or less portion of the uterus itself beyond the external organs of generation, is the result of a displacement of the organ, of a general lowering, or of a true prolapsus *en totalité;* and he holds that this opinion can be shown to depend on inaccurate observation. When the uterus appears externally, and even when the vagina is completely inverted, and the uterus, from the size of the tumour in the centre of which it lies, appears to be entirely prolapsed between the thighs, it is not because it has become generally lower in level, and completely left the pelvic cavity, but simply because it has undergone a partial or general (as the case may be) hypertrophic elongation. The best proof that can be given of this is, that in almost all the cases, the body of the uterus remains nearly in its usual situation; and that, if we examine the tumour with care, and measure the uterine cavity by means of the uterine sound, or any other appropriate instrument, the elongation is easily detected. And we can equally assure ourselves of the presence of the body of the organ in the pelvis by careful palpation of the tumour, and by the introduction of one or two fingers into the rectum. M. Huguier does not treat of all the various kinds of uterine hypertrophy; but confines himself to the consideration of the longitudinal hypertrophy which simulates, accompanies, or determines the descent of the uterus. The two principal varieties of the longitudinal hypertrophy—viz., as it affects the uterine neck *above* or *below* the insertion of the vagina—constitute two different diseases, although their nature is the same. Their causes, their mechanism, their symptoms, the accidents they may determine, and even the treatment they demand, are, however, quite different. Hence these two conditions demand separate consideration. And 1st, with regard to the hypertrophic elongation of that portion of the uterine neck *below* the insertion of the vagina. This is not of so much importance as the other form of hypertrophy; and we give merely the *conclusions* with which M. Huguier terminates this, the first part of his paper. 1. In this variety, the body of the uterus forms in the cavity of the vagina a cylindrical *swelling*, either resembling a more or less elongated cone, the free extremity of which approaches the vulva, or even passes between its labia without any shortening or inversion of the vulvo-uterine canal. 2. This elongation, which has been noticed by Morgagni, Saviard, Bichat, Lallemand, Desormeaux, Lisfranc, and Boivin, was considered by them as a simple anatomical variety. 3. Even until lately, it has been commonly confounded with the sinking and descent of the uterus, when it has been mistaken and treated for a polypus, a chronic retroversion, a follicular cyst, a cancerous or a dropsical enlargement of the neck. 4. No anatomical and nosological description has yet been given of it, although it possesses sufficiently precise characters as regards its causes, development, symptoms, and treatment. 5. The medical appliances, and the different kinds of cauterization, are only applicable to cases of slight hypertrophic elongation, and particularly to those which are of little extent, and are complicated with inflammation and engorgement. 6. When a hypertrophic elongation of the vaginal portion of the os uteri causes serious symptoms, and has attained a length of from five to seven centimetres, there is only one truly

efficacious means of cure, viz., the resection of the uterine neck to half a centimetre below the insertion of the vagina. The second part of the paper is taken up with the consideration of the hypertrophic elongation of that portion of the uterine neck situated *above* the reflexion of the vagina and its escape outside the vulva. M. Huguier affirms that the affection designated by authors and practitioners under the names of prolapsus and complete descent of the uterus is nothing else, in the very great majority of cases, than a longitudinal hypertrophy of the uterus, the body of which remains in the pelvic cavity, even although the vagina be entirely inverted, and the tumour hanging between the thighs be equal or even superior in length to the uterus in its normal condition. This proposition, startling though it appears, is the result of fifteen years' labour and conscientious inquiry. He denies the frequency of the complete prolapsus, holds that it is rarely seen, and that it has been generally confounded with the hypertrophic elongation of the upper portion of the uterine neck. Indeed, the swelling, which up to the present time has been described as complete descent or prolapsus, may depend on two different conditions—the one quite exceptional, viz., the true descent of the uterus with or without longitudinal hypertrophy; the other much more frequently met with, and forming the subject of the present paper. In establishing his proposition, M. Huguier relies on three kinds of proofs: viz., on cases scattered through the records of science, on pathological anatomy, and on clinical observation. Under the first head, reference is made to cases related by Saviard, Morgagni, Dance, and Cloquet. Under the second, the magnificent work of Cruveilhier is appealed to; and M. Huguier asks, if cases of the complete descent of the uterus were as frequent as authors pretend they are, how comes it that Cruveilhier has only been able to give a single representation of the affection in a work on which he has been occupied twelve years, and which he closed with the description of the diseases of the uterus and ovaries? With the exception of two cases, observed by MM. Morel-Lavallée and Blandin, M. Huguier knows of no others where the characters of the affection have been described in such a manner as to leave no doubt as to its exact nature. Of course, in this review, cases accompanied by considerable peritoneal effusion, or with very voluminous ovarian cysts, where all the pelvic organs are apt to be pushed downwards, are excluded. Since the year 1843, when M. Huguier began to use the uterine sound, he has carefully examined sixty-four cases of pretended complete prolapsus; and of this number only two were instances of true and complete prolapsus, unaccompanied by hypertrophic elongation. In a third case, there were at once complete prolapsus, retroflexion, and considerable hypertrophic elongation of that portion of the uterine neck above the insertion of the vagina. In this series of sixty-four cases, M. Huguier has included only those which would be considered, according to the descriptions of authors, as instances of complete prolapsus, in which the length of the tumour was at least equal to that of the uterus in its normal condition (though in most cases it exceeded this), and where the vagina was completely inverted. All cases of slight descent of the uterus, described by authors under the name of semi-prolapsus or incomplete descent, and even those where the neck and vulvo-uterine canal, partly inverted, projected from two to three centimetres from the vulva, were excluded. After mentioning that for some time past he has been in the practice of expounding these facts at his hospital visit, and that M. Robert, at the Hôpital Beaujon, has verified them in his own practice, M. Huguier concludes by stating that a careful examination of the various preparations in the Musée Dupuytren, along with the conservator, M. Houel, only confirms the truth of his observations.—*Edinburgh Med. Journ.*, April, 1859, from *L'Union Médicale*, March 10, 1859.

AMERICAN INTELLIGENCE.

ORIGINAL COMMUNICATIONS.

Case of Spontaneous Evolution of the Fœtus. Reported by David D. Richardson, M. D., of Blockley Hospital.

Mary Ann Burk, born in Ireland, aged 23 years, was admitted into Blockley Hospital October 25, 1858. On the Friday preceding her admission, while at work, she received an accidental blow over the uterus which ruptured the membranes and produced the entire discharge of the liquor amnii. The patient was not at term by several weeks. During Friday, Saturday, and Sunday her sufferings were very great. On Monday, as above stated, she was admitted into the Hospital, having been conveyed there in a carriage; still in much pain, she was taken to the obstetrical ward without delay and placed in bed. Making an examination per vaginam, I found an elbow presenting; but owing to the rigid contraction of the os uteri about the arm, made no attempt to correct the presentation. The uterine contractions soon became rapid and vigorous. On making a second examination, I discovered the right hand protruding through the external organs.

About two hours subsequent to the first examination, the os was patulous, and the vagina relaxed and moist.

Deeming this an appropriate time to interpose, I endeavoured to make version by the feet; but finding the uterus so sensitive as to contract energetically upon the slightest touch, was obliged to desist. In the hope of obviating the mal-presentation, I exhorted the patient not to bear down, and she endeavoured to obey the injunction, but without avail. The uterus continued to contract rapidly. Fearing laceration, I introduced my hand, determined to make the most eligible change in the position of which the case would admit. Much to my relief and gratification, I found the child's arm had receded into the uterus, the hand only remaining without the os. In the course of an hour and a half the child was ushered into the world, the head being first born, making evidently a case of spontaneous evolution. The fœtus weighed five pounds and a half—was stillborn, having been dead apparently several days. The patient convalesced happily—suffered no unpleasant consequences, and was able to resume her usual avocations in about ten days. This was her second accouchement, her first child having also been born dead. It may not be uninteresting to state that the whole time occupied in the above process, from the time the patient was placed in bed until her delivery, was about five hours.

My colleague, Dr. Thomas L. Taylor, and others, were present and examined the case.

The Local Application of Belladonna for the Dispersion of the Milk. By Geo. McC. Miller, M. D., of Brandywine Village, Del.

The number of this journal for July, 1858, contains a report of a case in which, with apparent effect, I employed the extract of belladonna,

locally applied, for the dispersion of the lacteal secretion. So far as I am aware, this was the first *original* American article on the subject, previous notices of the use of the remedy for its supposed antigalactic properties having been culled from foreign periodicals. I now take the liberty to add the following case as seemingly confirmatory of the one just alluded to, and as bearing upon a principle of blended biological and therapeutical interest.

This case occurred to me during last autumn. As I kept no notes of it, and the patient lives at a considerable distance from my residence, rendering access to her inconvenient, I shall be under the necessity of omitting the minor features and details of the case, and shall merely present in a very few words its essential points.

Mrs. M——, aged probably between 30 and 35, the mother of three or four children, the youngest of whom was about a year old, applied to me for something to dry up her breasts, as she desired to wean her babe. The milk was abundant. As the infant was of a suitable age, and the season favourable, I encouraged her to wean her child, particularly as her system was already debilitated and too heavily taxed by the demands for nourishment made upon her by her offspring. I directed her to apply three times a day to the areola of each breast a solution of extract of belladonna, consisting of gr. x of the extract dissolved in f℥ss of water. I usually order only half a fluidounce of the menstruum, as that is sufficient for every purpose. I then left her, requesting her to apprise me, within a few weeks, of the result of the treatment. She complied with my request, and called at my office, stating that she had used the remedy suggested for about a week, and that the milk had dried up. She spoke in high terms of the belladonna, declaring it to be superior to anything that she had ever used for the same purpose before.

It will be observed that I do not use a very strong solution of the extract. As the lacteal secretion is *gradually* established in the natural course of things, so I conceive it ought to be *gradually* suppressed; and this special object is attained by the use of a moderately strong solution.

I of course do not imagine that the two cases which I have reported establish beyond doubt the utility of belladonna in the point of view in which it is here considered. They merely afford a certain measure of presumptive evidence of the fact. My observations are intended principally as hints to those whose opportunities of testing the milk-dispersing properties of the article in question are superior to my own.

Case of Herpes Zoster occurring a Second Time. By J. FORREST KENNEDY, M. D., of Mechanicsville, Cedar County, Iowa.

Samuel Monroe, farmer, aged 66 years, called on me, April 1st, 1859, to consult me in regard to an eruption accompanied with an intense pain. He stated that *he had had an eruption similar to it about* 25 *years ago*, and that his physician then called it "shingles."

The present was as well a marked case of herpes *zoster* as could be imagined, but presented some features which I believe to be unusual. It occupied exactly one-half of the circle lying between the linea alba and the spine, on the left side.

The patient stated that he had been riding on horseback, and being thrown, was very much frightened, but not materially hurt. About two weeks after the accident he was attacked with severe and almost intolerable pain in the breast, which extended from the sternum to the spine. The pain

he described as if the left half of his body had been inclosed and tightly tied by a ligature. Thus the pain continued for ten or twelve days, when a little crop of vesicles made their appearance, which gradually spread each way, until they had reached the *ultima thule* of their journey.

He was in this state when I saw him, still suffering a great deal of pain, but much less than before the appearance of the eruption.

The *treatment* was very simple, consisting merely of opiates to relieve the pain, together with an anodyne ointment, and the bowels to be kept in a soluble condition. The eruption has gradually disappeared, though he still experiences considerable pain, which he says is gradually becoming less and less.

The irregularities in the case were, as I conceive, these: 1st. The *age* of the patient, sixty-six years. 2d. Its being his *second* attack. I do not recollect of ever having read of its attacking the same individual the second time. 3d. The *intense pain* experienced so long before the appearance of the eruption, and continuing so long after its disappearance.

Mechanicsville, Cedar Co., Iowa, April 19th, 1859.

Strangury caused by Opium. By John Hockenhull, M. D., of Dawsonville, Dawson County, Ga.

Mrs. C——, the subject of this idiosyncrasy, a stout healthy woman, had been two days before I was called, delivered after an easy and natural labour, of a fine healthy child.

When seen by me she was suffering from slight inflammation of the uterus, for the relief of which I exhibited a combination of calomel, ipecac, and opium, and applied astringent and anodyne cataplasms to the abdomen. Soon after commencing this treatment strangury made its appearance with the usual symptoms, viz., a frequent and an urgent desire to micturate, but without being able to gratify it; burning and cutting pains at the neck of the bladder; cutting pains also along ureters and urethra, accompanied with some tenesmus. This condition compelled me to introduce the catheter daily for four successive days, when, in consequence of the system being under the mercurial influence, I desisted from further treatment. But a return of the disease being threatened, I resumed the former treatment, which was followed again by the strangury. This induced me to suspect that some one of the remedies administered might be the cause of the strangury.

In order to test the correctness of my suspicions, I suspended each remedy in succession, but the strangury continued until the opium was at last suspended. After this the strangury ceased in 24 hours, but again recurred on again exhibiting the opium.

After making known to the family the cause, they informed me she had been similarly afflicted during an attack of bilious fever, while residing in Texas, after opium was administered to her by her physician, but that it was not suspected to be the cause.

Removal of Foreign Bodies from the Ear.—Dr. W. I. Archibald, of Crawfordsville, Miss., writes to us that he has succeeded in removing a foreign body from the ear by the following method, after failing with every other instrument he could obtain; and he is convinced that it will answer in many cases.

A circular piece of isinglass or court-plaster is to be cut of about two lines in diameter. Upon the back of this a thread of 12 or 15 inches long

is to be attached by means of a very narrow strip of plaster of the same kind, placed at right angles over the thread. After this becomes dry, a piece of muslin or cotton cloth is to be torn two inches long and of sufficient width to be rolled around both arms of thread into a cylinder of required size and firmness. The ends of thread should next be drawn so as to bring the plaster upon the extremity of the cylinder. One end of the thread may be wrapped around the cylinder to keep it from unfolding. The meatus to the surface of the foreign body should now be freed from moisture, if present, which may usually be quickly done by turning in the ear a few rolls of lint or soft cotton cloth. After this the surface of the plaster may be wet and applied to the foreign body. From five to ten minutes will perhaps be sufficiently long in all cases for adhesion to take place. On drawing out the plaster, the foreign body will be removed with it.

Treatment of Diabetes.—By N. W. CALHOON, M. D., of St. Charles, Mo. An article in the April number of your valuable journal, on the treatment of diabetes, suggests to my mind the propriety of communicating to you a promptly successful method of treatment which I have practised for some years past in the management of that disease, particularly as it presents itself in old subjects. Forbidding the use of fluids, except in small quantities, and enjoining the use of solid food and the observance of quietude, I direct the following powder to be taken three times a day, viz., Pulv. Doveri, gr. v; acetas plumbi, gr. iij; sulph. quin., gr. ij. If necessary, the bowels are to be kept gently open with ol. ricini. I have never found it necessary to continue the above treatment more than four or five days.

DOMESTIC SUMMARY.

Clinical Report on Pneumonia.—Dr. AUSTIN FLINT has published (*Buffalo Medical Journal*, May, 1859) an interesting clinical report on cases of pneumonia, observed by him at the New Orleans Charity Hospital, 1858 and 1859. We subjoin his conclusions and remarks.

Of the fifteen cases, in all the pneumonia was limited to a single lobe. In one instance two lobes were successively attacked (cases 3 and 4), recovery from the first attack having taken place before the second occurred. This was probably true in another instance (case 9). The lower lobe was the seat of the disease in all save two cases. In one of these (case 4), they had been previously affected, and this was probably true of the other instance (case 9).

Of the thirteen cases in which the lower lobe was affected, the disease was seated in the right side in seven, and in the left side in six.

The pneumonia was primary in twelve of the fifteen cases. Of the three instances in which it was developed secondarily, it occurred as a complication of typhoid fever in two, and as an intercurrent affection in pulmonary tuberculosis in one instance.

In the twelve primary cases, the disease was uncomplicated in all but three instances. Delirium tremens was developed as a complication in ten cases; and in one instance, pleuritis with considerable liquid effusion coëxisted. More or less pleuritis is almost uniformly present in cases of pneumonia, but it is certainly rare for the pleuritis, under these circumstances, to be attended by much effusion.

The ages of the patients varied between 20 and 45, the mean age being about 30. In nearly every instance the patients were robust and in good health when

attacked with the disease. Several were intemperate, and several were subject to attacks of intermittent fever.

Exclusive of three cases remaining in hospital at the end of my term of service (two of these remaining with other affections), and of the case which ended fatally the length of stay in hospital varied from six to twenty-two days; the mean period being a fraction over thirteen days.

A fatal result occurred in one case only. In this case, as already stated, the patient had been discharged a few days before, convalescent from an attack of pneumonia affecting the lower lobe of the right lung. He resumed his habits of intemperance directly he was discharged, and was seized a second time with pneumonia, now affecting the upper lobe of the left lung. He walked to the hospital, a distance of three miles, after being attacked, and died by asthenia, fifteen hours after his admission, without coming under my observation.

Convalesence was rapid in all instances, save one in which the pneumonia occurred as a complication of typhoid fever. Exclusive of this instance, the resolution of the affected lung, as shown by the disappearance of the physical signs denoting solidification, was rapid. The resolution was in all instances complete, slight relative dulness on percussion only remaining, which, as is well known, persists for some time after recovery from pneumonia. In all instances the symptoms of the disease, viz., cough, expectoration, etc., completely disappeared. In no instance were the patients left enfeebled, but at the time of discharge they all reported themselves able to return to their avocations, and the majority were day laborers.

The treatment pursued in these cases, as the reader has doubtless remarked, was not complex. The sulphate of quinia was given in tolerably full doses, in the cases in which intermittent fever had previously existed. This remedy was not prescribed with special reference to the pneumonia, but in order to forestall the development of intermittent fever as a complication. Quinia has been extolled as a valuable remedy in pneumonia, irrespective of the liability of the disease to become complicated with intermittent fever if the patient reside in a malarious section, and, especially, if he has been subject to attacks of the latter affection. However this may be, it is certain that the remedy, given in full doses, does not exert an unfavourable influence on the progress of the pneumonia. It is not contra-indicated by this affection. To prevent the development of intermittent fever, and, if developed, to arrest the paroxysms as speedily as possible, are important objects of treatment in certain cases of the disease under consideration. The combination of the two affections often places the patient in imminent danger, when with either affection, singly, his condition would not be serious. Happily, under these circumstances, we possess a special remedy by which we may expect to control one of the affections. This, then, is the leading indication, and the life of the patient may depend on its being promptly and effectively fulfilled. The practitioner who gives precedence to indications derived from the pneumonia, under these circumstances, or who so divides his attention as to fulfil incompletely the leading indication, commits an error which may be fatal to the patient. As a rule, it is well to recognize, at the commencement, a liability to this complication, and to forestall its occurrence, especially when the protective remedy, to say the least, does not interfere with the favourable progress of the pneumonia.

Opium entered more or less into the treatment of these cases. My observations have led me to regard this as a valuable remedy in pneumonia. As a palliative of pain, it fulfils an important indication; for pain, in addition to the suffering which it occasions, determines an afflux of blood to the painful part. This fact is illustrated in neuralgia affecting the supra-obital nerve. During the paroxysm of pain, the eye becomes injected, and the redness rapidly disappears after the pain has been relieved by an opiate. But there is reason to believe that opium exerts a salutary effect beyond the relief of pain. I have repeatedly noted marked diminution in the frequency of the pulse and respirations, in cases of pneumonia, a few hours after the patient had taken full doses of opium. It appears to lessen the perturbatory effects in the economy of the local inflammation, if, indeed, it does not diminish the intensity of the inflammatory action. Some practitioners are deterred from the use of this remedy in pneumonia, by

the idea that it interferes with the removal, by expectoration, of the exuded products of inflammation. But how often do we observe the rapid disappearance of the solidification in pneumonia, with slight expectoration, or none whatever! The intra-vesicular exudation is, for the most part, absorbed, not expectorated, a fact not strange when the structure of the cells, and the facility of endosmosis in this situation are considered. Interference with expectoration, therefore, if true with respect to the employment of opium in pneumonia, is not a valid objection. The merits of the remedy, however, in this application, must rest on clinical experience; and I cannot but think that this paper will be of some utility, should it serve to remove from the minds of some readers, groundless apprehensions with respect to the free use of opium in pneumonia.

Alcoholic stimulants were employed to a greater or less extent, in the treatment of these cases, and in all the cases the patients were placed on a nutritious diet. The abstract notion that stimulants and sustaining food are inconsistent with the treatment due to local inflammation, is a remnant of Broussaism which still exerts considerable influence on medical practice. It suffices to destroy this notion, to bear in mind the significant injunction of Chomel, viz., *not to treat diseases, but to treat patients affected with disease.* With regard to stimulants, it may be stated, as a rule, that they are indicated in cases of local inflammation, whenever the patient in health is addicted to their use. They cannot with safety be withheld, under these circumstances, if the local inflammation involve, from its seat or intensity, danger to life. But without reference to previous habits, the use of stimulants in the treatment of pneumonia, and of other local inflammations, is important in proportion as it becomes an indication to support the powers of the system. It is, perhaps, an error in medical practice as common and as serious as any, to overlook or depreciate this indication in the management of local diseases. Practically, the existence of this indication and its urgency, in individual cases, may be brought clearly and forcibly before the mind by proposing at the bedside the following questions: Is the patient in danger of death? If death occur, will it take place by asthenia? How imminent is the danger of death by asthenia? Whenever, in the management of disease, the physician has reason to fear that he may lose his patient by asthenia, and in proportion to the tendency to a fatal result by that mode of dying, alcoholic stimulants, as a rule, form an important part of the measures indicated, on the same ground that they enter into the treatment of fevers. And this remark applies equally to nutritious diet, viz., the animal essences, etc. Cases of pneumonia occur in which patients are to be saved by pursuing, boldly and perseveringly, the supporting treatment precisely as in cases of low typhus or typhoid fever. And the indications of this plan of treatment may be present early, as well as late in the progress of the disease. The union of delirium tremens, with pneumonia, for example, often places the patient in imminent danger of death by asthenia. The free use of stimulants and concentrated nutriment, is requisite to carry him safely through the perils of this combination. Two of the cases included in the present collection (Nos. 13 and 14) illustrate this remark.

But even when the danger to life is not great, it is an object to support the system with a view to a speedy and rapid resolution of the inflammation. Alcoholic stimulants may not be required for this object, but it will be promoted by a nutritious diet. The fear of feeding the disease by feeding the patient, is a vulgar notion not warranted by clinical observation. I do not hesitate to allow patients to take food as nutritious in quality and as freely as they desire. The late Dr. Graves was so impressed with the importance of supplying the system with nourishment in febrile diseases, that he desired to be placed as an epitaph on his tomb, "he fed fevers"! He might have extended the circle of diseases in which feeding is important. It is hardly less important, in some instances, speaking metaphorically, to feed pneumonias, than to feed fevers, and, indeed, feeding, as an essential element of supporting treatment, is important in any disease when it is an indication to obviate the tendency to death by asthenia.

With regard to the time when an active supporting plan of treatment (stimulants and concentrated nutriment) is indicated, and the extent to which it is to be carried, I will make but a single additional remark. If there be room for doubt on these points, it is better to err by commencing too soon, and pushing

it too far, than by delay and insufficiency; for while it is easy to discontinue or diminish supporting measures before much if any actual harm is done, time which has been lost cannot be recovered.

Quina, opium, alcoholic stimulants and nutritious diet, constituted the treatment in the cases embraced in this report. The grounds for the non-employment of certain therapeutical measures, in these cases, are now to be considered. Blood-letting, general and local, tartar emetic, the veratrum viride, mercury, cathartics, blisters and other modes of counter-irritation are employed, to a greater or less extent, in the treatment of pneumonia. None of these remedies, however, entered into the treatment of these cases. This fact, without explanation, might lead to erroneous inferences as regards the views of the writer.

Blood-letting in pneumonia has, of late been much discussed. I have contributed my mite towards this discussion,[1] and do not propose to enter upon it in this paper. I will simply remark, that, in my opinion, it is an error to assume blood-letting to be never useful in pneumonia, albeit it is a far greater error to advocate the indiscriminate employment of this spoliative measure in that affection. The propriety of blood-letting, however, is rarely a question in hospital cases of pneumonia. In the great majority of instances when patients are admitted into a hospital, the disease has advanced to the second stage; one or more lobes are solidified, and, under these circumstances, the abstraction of blood will, in general, only tend to retard resolution. Had these cases been under observation from the commencement of the disease, it is possible that blood-letting might have been indicated in some instances, not with a view to arrest the inflammatory action, nor to limit its extent, nor to lessen the amount of exuded products; but to diminish the intensity of symptomatic febrile movement, relieving the heart of over-accumulation of blood in its cavities, and consequent over-tasking of its powers. With this limited view of blood-letting, making due allowance for its evils, it is indicated in only a small proportion even of the cases of pneumonia which come under observation at the onset of the disease.

The tartar emetic and veratrum viride undoubtedly control, in a marked degree, the frequency of the heart's action, and, so far, diminish, for the time symptomatic febrile movement. It remains, however, to be determined, to what extent this effect is important with reference to the inflammatory process and resolution. We can at this day understand how Laennec was deceived in attributing the rapid removal of the exudation in pneumonia to the influence of tartar emetic; for it had not then been observed, as it has been since his day, that the exudation disappears, in some instances, quite as rapidly without any treatment. These cardiac sedatives, if useful when the symptomactic febrile movement is intense, are certainly not indicated when the action of the heart is but slightly or moderately increased, as in a pretty large proportion of the cases of pneumonia in which the affection is limited to a single lobe, especially after exudation has taken place.

The action of mercury has been considered as useful in two ways in pneumonia, viz., limiting the amount of exudation and promoting its absorption. With reference to the first of these supposed effects, the exudation in pneumonia generally takes place, to its fullest extent, before mercurialization can be produced. With reference to the second effect, the exudation is absorbed, in favourable cases, quite rapidly without mercurialization. Without, therefore, presuming to deny altogether the so-called anti-plastic and the sorbefacient powers of mercury, I believe that it is a remedy generally uncalled for in the treatment of pneumonia. The occurrence of salivation at the time of convalescence, is, to say the least, an inconvenience which, if not necessary, it is desirable to avoid. Having for many years relinquished the use of this remedy with reference to its special or constitutional effects in treating this disease, I am satisfied that it may with safety and advantage be dispensed with.

Cathartics, as a means of depletion during the early stage of pneumonia, may be indicated. If adequate to fulfil the object of depletion, they are certainly to be preferred to blood-letting, since they do not involve an expenditure of the

[1] Report on Blood-letting in Pneumonia, Buffalo Medical Journal, vol. xi. 1856. Page 288.

organized constituents of the blood, and are therefore not spoliative. Except for this purpose, it may fairly be doubted whether they are called for in pneumonia. They conflict with supporting measures when these are indicated. That they are not important with reference to the absorption of the exudation, is sufficiently illustrated by the cases reported in this paper. In one of the cases (No. 15) considerable liquid effusion, together with the solidifying deposit, disappeared in a few days, although, inadvertently, the bowels had been permitted to remain constipated for a week.

Blisters and other modes of active counter-irritation, when employed in pneumonia, are, of course, considered as acting usefully by way of revulsion. I suppose that no judicious physician attributes to them this action during the first stage of the disease. To employ them in this stage is to add a certain amount of cutaneous inflammation to the existing pulmonary inflammation. After solidification has taken place, all the results to which the inflammation may be expected to give rise, have already occurred. Revulsion, then, where it is attainable, ceases to be an indication. Is it imagined that a traumatic inflammation of the skin diminishes the afflux of blood to the affected lung? But the affected lung in the second stage of pneumonia is already anæmic! The inconvenience occasioned by blisters to the patient is considerable; they are also a source of inconvenience to the practitioner, by interfering with the daily examinations of the chest in order to determine the physical condition of the affected lung. These remarks, of course, do not apply to mild revulsive applications, such as sinapsims, and to fomentations which doubtless possess a certain value in the treatment of pneumonia.

The several therapeutical measures, thus, which have been enumerated, as not entering into the treatment of the cases of pneumonia now reported, were not employed, because, with reference to some of them, the disease did not come under observation sufficiently early to find the indications for their use, or, the indications existing in a certain proportion of cases only, they did not happen to be present in these cases; and with reference to other of the measures mentioned, their value and propriety in the disease under consideration are, to say the least, doubtful. As the modern conservative surgeon rejects the doctrine contained in the old aphorism, *melius anceps remedium quam nullum;* so the conservative physician should refuse to resort to remedies which are either unnecessary or of questionable utility, except in the cases in which a deviation from this rule is warranted for experimental observation. I cannot but think that the practice of medicine would gain much if practitioners, instead of deliberating at the bedside as to whether this or that potent remedy is called for, were oftener in the habit of propounding to themselves this inquiry: Are there present any clear indications for interference?

The last remark suggests a point of fundamental importance in the treatment of this, as well as other acute diseases, viz., its intrinsic tendency as regards termination. Does pneumonia, in itself, tend to destroy life? We might answer this question by citing the results as reported by different practitioners, the disease being treated by different and sometimes quite opposite measures. But the clinical study of the disease uninfluenced by medication, pursued of late years on an extended scale, enables us to answer the question more directly. The results reported by Dr. Dietl, and others, in which, in a large number of cases, no active remedies were employed, show that pneumonia, limited to a single lobe, and uncomplicated, ends in recovery in the vast majority of instances. This statement is, of course, exclusive of the epidemic forms of the disease; but it is probable that the fatality of epidemic pneumonia depends generally on some important complication, or associated affection. A series of cases of sporadic, uncomplicated pneumonia, therefore, ending favourably, under a certain plan of treatment, does not afford adequate evidence that the success was due to the treatment. It would be a fairer conclusion to impute the success to the intrinsic tendency of the disease to recovery. On the other hand, a series of cases in which the fatal cases were not few, would justify, at least, a suspicion that the want of success might be due to the treatment. It would, however, be an error to suppose that because pneumonia, under favourable hygienic circumstances, generally ends in recovery without medicinal treatment, that medication is con-

sequently never called for. Better far, indeed, no treatment than injudicious interference; but judicious treatment may nevertheless save some lives which would be lost under the expectant plan. Moreover, there are objects of treatment in disease, in addition to recovery. Relief of distressing symptoms during the progress of disease; a cure *cito et jucunde* as well as sure; a convalescence rapid, and a recovery complete, leaving the powers of the body not permanently impaired—these are important ends to be kept in view in medical practice. The natural history of a disease, and its intrinsic tendency to life or death, constitute the true point of departure for the study of therapeutics in relation to that disease; but medical art should not be content with being able to state the chances of recovery, even when the chances are vastly in favour of this termination.

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Ovariotomy.—Dr. D. McRuer, of Bangor, in an interesting paper on this subject (*Maine Med. & Surg. Reporter*, February, 1859) divides cases of ovarian disease into three groups, each having, he considers, a different relation to the operation: "1st. Those that are ushered in by acute symptoms, and severe constitutional disturbance, producing in their early stages a great prostration of the vital powers. 2d. Those cases which are mild in their manifestations, and slow in their progress, producing little or no constitutional suffering, and requiring many years of continuance before a resort to tapping becomes necessary, or a repetition of it required—and another group, intermediate in their relations to those already mentioned; and to this latter class of cases of ovarian disease, the writer would confine the operation of gastrotomy, and of these, a careful selection should be made, of such cases as by repeated minute examinations, exhibit satisfactory evidence of being exclusively ovarian, having a freedom from extensive adhesions, or any other complication, objectionable to an operation. Even in these cases the operation ought not to be urged, but only suggested, giving at the same time a candid explanation and avowal of opinion, in regard to the chances of its success, leaving the decision to the patient; for no person can properly estimate the value another sets upon his life, or make the just deduction from its worth, on account of the sufferings of disease; each case being a problem, having its own peculiar number and variety of elements, and defying an equitable comparison with any other.

The foregoing classification of ovarian disease in its relation to an *operation*, is not a mere hypothesis, for it has a foundation in the natural history of that malady, and the following cases may be considered fair representatives of each group.

In the case of Mrs. R., of H., the disease manifested itself by acute suffering in the ovarian region, severe febrile paroxysms, general tenderness of the abdomen, a rapid growth of tumour, terminating in six months from the access of the disease in such an amount of effusion as to require the aid of the trocar to relieve the consequent thoracic oppression, and its repetition in three months after; the case terminating fatally within one year from its commencement. This case belongs to the first group, and the man must be reckless and inconsiderate who should under such circumstances recommend the operation of gastrotomy.

Miss S., formerly of Bangor, has had ovarian disease for the past twenty-five years. She has suffered no inconvenience from the tumour, except from its bulk from which she obtains relief by tapping once in 4 or 6 years. She still lives, and enjoys a comfortable degree of health. An operation would be objectionable in this case, for the continuance of the disease in its mild and sluggish condition, is a less evil than the dangers attendant on gastrotomy.

The intermediate or *operative* group is represented by the following case: Miss Margaret George, of Orrington, aged twenty-two years, of delicate organization, active habits, and of very cheerful and hopeful disposition, informs me, that during the summer of 1855, she lost flesh, and was occasionally troubled with pain in the right side, occasioned, she supposed, by fatigue, as she was teaching school at the time, and had to walk over two miles each day. This indisposition lasted but a short time, and did not return for five or six months, when the pain or side-ache came on again, and she perceived a slight alteration in her form. In April, 1856, she discovered a circumscribed swelling on *the*

right side, with occasional darting pains through it. By advice of a physician she made use of a wash, which relieved her so much that she engaged to resume school teaching; but before the school commenced, she became worse, and the tumour increased in size to such a degree, that it was thought proper to have further medical advice. At this stage of the case I was consulted, and found the disease to be connected with the ovary, and from the fact that the right side was the seat of the first uneasiness, I supposed that the right ovary was the one diseased. The swelling at the time I first saw her, seemed to occupy the whole of the abdomen, and she did not complain of more distress or suffering than might have been produced from the bulk and pressure of the tumour. Miss G. at this time retained all her buoyancy of spirits and energy to such a degree that she was reluctant to lay aside her habits of active in and out-door exercise. This state of things continued, with the exception of a steady increase of size, until February, 1858, when the oppression became so distressing that tapping was resorted to, and 30 pounds of a dark and glutinous fluid was drawn off. In a few days she was able to resume her usual place in the family, and visited, as she formerly did, her friends in the neighbourhood, by riding or walking, as opportunity presented. But the effusion began rapidly to accumulate, and in July it was found necessary to use the trocar again, when about twenty pounds of a fluid, much thicker than what was drawn before, escaped. Four days after the tapping she left her room, and with the exception of a loss of flesh, and a slightly accelerated pulse, she appeared as well as she did after the former tapping. However, a few weeks' time convinced me that this palliative treatment would soon exhaust her, and as no objectionable condition to an operation could be detected, the chances of its success as well as its dangers were presented to her, and to her family, with the assurance that it was the only thing left to be attempted, different from the treatment already pursued. On the 28th October she was tapped again, and 34½ pounds of fluid were taken from her. She now wished to avail herself of the chances of ovariotomy, and the 18th of November was appointed for the operation, being one week following her expected menstruation. Directions were left for a gentle cathartic, of castor oil, to be taken on the 17th, and an injection of warm water to be given on the morning of the 18th, and no solid food to be allowed for twenty-four hours previous to the operation.

November 18th, at 2 o'clock P. M., after securing a temperature of 75°, and a humidity of the air of the room, by the vapour of boiling water, the patient was placed on the table, and brought under the anæsthetic influence of sulphuric ether. An incision was made through the walls of the abdomen, in the median line, of sufficient size to ascertain that the tumour was a *multicyst*, and that no inseparable adhesions existed. Attempts were made at this stage of the operation, to empty the cysts by the trocar, but in consequence of the thick and flaky character of the fluid, obstructing the canula, it was determined to enlarge the incision, and extract the tumour entire. The incision was increased to the extent of 11 inches, and it was then found that the adhesions to the tumour consisted of the omentum, peritoneum of the right side, and the under surface of the liver. The two first adhesions were about a hand's breadth in extent, the latter about an inch and a half square. These adhesions were so firm, that it was impossible to separate them without rupturing many vessels, and leaving attached to the peritoneal surface strips of the outer covering of the cysts. The adhesion to the concave surface of the liver, alone yielded without occasioning any laceration. In effecting a separation of the adhesions, many of the cysts were ruptured, which greatly complicated the operation. The pedicle was found to be on the left side, and of half the size of an adult wrist. It was secured by a double ligature of linen cord, and four ligatures of silk thread were found to be necessary to secure the omental vessels. The tumour was entirely removed, and the abdominal cavity carefully sponged, the edges of the incision kept in apposition by nine stitches, and the whole abdomen supported by a broad roller. The patient was then placed in bed, and she soon recovered from the effects of the ether, and expressed herself as feeling much more comfortable than she expected; at this time the pulse was 90, and of sufficient

volume not to require any diffusible stimulant. Forty drops of laudanum were given."

It is unnecessary to notice the progress of the case, which was favourable. The ligatures of the pedicle came away on the 34th day; all the omental ligatures except one came away earlier. The wound, at the date of the last report, had healed, the patient had recovered strength, and her catamenial functions were naturally performed.

"The tumour consisted of numerous cysts from the capacity of three or four quarts, to that of a few drops, interspersed with masses of gelatine, held together by areolar tissue. Many of the cysts were compound and endogenous, and even the third series of filial cysts might be traced from the parent sac. These cysts were formed of two layers—one external, fibrous, resembling very much a healthy *dura mater*, and an internal, of the appearance of the peritoneum slightly inflamed, its capillaries were highly injected, and were revealed most beautifully by the microscope. The coats of the cysts were held together by an intervening cellular tissue. The inferior cysts seemed to originate from the gelatinous masses which appeared to be deposited between the walls of the parent sac, and they generally were attached by broad bases to these heterologous bodies.

The whole of the tumour weighed as follows:—

Solids, &c., removed entire	26⅔ lbs.
Fluids secured	22½ "
" lost, (at least)	10 "
Weight of the whole	59 "

The contents of the cysts were of different consistences. Some were nearly limpid, others were as thick as molasses, and so tenacious that they could not pass through a large sized canula. Notwithstanding this difference of fluidity of the contents of the cysts, they all had the same specific gravity, 1013; but when some of the most limpid were exposed rapidly to a boiling temperature, and then cooled suddenly to their former standard of heat, so that little evaporation was produced, their specific gravity rose to 1035, showing that its levity depended in a great measure upon air or gas being held by its particles. Its chemical character was evidently that of gelatine, as it could be precipitated by tannin, even when largely diluted with water. No albumen could be detected in it, even by the most delicate tests. The microscope revealed nothing in this abnormal fluid except nucleated cells, resembling those of pus, only larger. No caudate or other abnormal cells could be discovered, but from the general *colloid* character of the *intracystoparietal deposits*, as well as from that of the fluids, we fear the case may not be free from malignancy, although the general good health and energetic character of the patient strongly negative such a conclusion."

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Treatment of Fracture of the Thigh.—Dr. G. F. Shrady, Resident Physician to the New York Hospital, gives (*New York Journ. of Med.*, March, 1859) the following account of the mode of treatment for fractures of the thigh, introduced some years since in the New York Hospital, and which is very similar to that practised in the Pennsylvania Hospital. The statistical results, it will be seen, show the method to be highly successful:—

"Previous to 1837, fractures of the thigh in this institution were treated for the most part over the double inclined plane, and but very rarely Boyer's apparatus was employed. The results under this mode of treatment, as might be expected, were very unsatisfactory.

"About the time I refer to, Dr. Gurdon Buck, who was on a visit to Philadelphia, saw Dr. Physick's apparatus, a modification of Desault's, for the treatment of these fractures, and was so well pleased with its general principle of application, that he determined to introduce it into this institution, as a decided improvement upon the old plan. This he did soon after his return to the city. He adopted Dr. Physick's apparatus in all its details, which consisted of a long outside splint, reaching from the axilla to eight or ten inches beyond the foot.

It was perforated at its upper end with two half-inch holes for the purpose of securing the ends of the counter-extending perineal strap, and the extending band, formed of a silk handkerchief, was passed over a block that stood out from the splint below the foot, being secured finally in a hole further down at the lower end of the splint. There was also a short splint reaching from the perineum as far as the inner ankle, and a body-belt, passing around the thorax, tacked to the upper end of the long splint. In addition to all this, chaff pads were interposed between the splints and the limb. In applying the splints, they were first rolled up in a splint-cloth, and well secured in place by four separate bands passing around the whole apparatus.

"After making use of the apparatus for some time, it was found to be defective in many particulars; for instance, the readjustment of the splint-cloth was found to be very troublesome, as it had to be repeated daily. The first improvement, then, of Dr. Buck was the substitution for these cloths of pads, which were fastened to the splint. The next improvement made by the doctor, was a pocket in the body-belt, and to the lower edge of this pocket were fastened buckles for the counter-extending strap. By this arrangement the splint could be removed for the purpose of readjustment without disturbing in any way either the belt or strap.

"Notwithstanding the utmost care and pains bestowed on the adjustment of the extending band to the foot, it was found impossible to prevent sloughing and excoriation either above the heel, or over the instep. Owing to the evil consequences of such extension, it was finally supplied by well adapted lateral pressure, the limb having been previously extended. This being the case, it was necessary to reapply the pressure daily. This method was persevered in for some time, but was at length abandoned for the use of the adhesive plaster as a means of extension. It was first employed in 1850, during the residence of Dr. Frederick D. Lente, now of Cold Springs, Putnam County. This gentleman, by his zeal and intelligence in its application, successfully inaugurated its use in this institution as a valuable auxiliary in the treatment of this fracture. Buck's modification of Physick's Desault, is certainly a triumph in modern surgery, so far as it relates to shortening and deformity. I have now noticed the principal modifications of Physick's splint; there are, however, several minor ones, which will appear in the subjoined description of its mode of application.

"When a patient is admitted with a fracture of the thigh, there being generally a good deal of swelling present, the limb is placed upon the double inclined plane until all the tumefaction has subsided. Then he is prepared for the application of the straight apparatus. The first step consists in the preparation of a double band of adhesive plaster about three inches in breadth, which is cut long enough to extend from below the point of fracture on either side of the limb, forming a loop underneath the foot, a sufficient distance from the sole to allow of the introduction of square block. This block is a little broader than the foot, and serves to prevent the pressure of the adhesive bands over the ankles, and also affords a firm point to which is attached a short cord for extension. This adhesive strap is applied smoothly to the sides of the limb and a bandage applied over it, leaving the loop free, extension being kept up in the meantime by an assistant. The body-belt and perineal strap are next adjusted, after which the coaptation splints are applied in the usual way around the seat of fracture. Then the upper end of the long splint is placed in the pocket of the body-belt, the limb drawn down as far as possible, and kept fully extended by means of a stout cord over the footpiece. This cord is attached to a ring in a large wooden screw which plays through the block standing out from the internal surface of the splint. Next the inside splint, extending from the groin to the malleolus is applied, pads of blanket are then stuffed on either side to adapt the splint to the inequalities of the limb. All this having been done, the last step in the operation consists in binding the splints together, which is accomplished in the following manner. Three strips of bandage are passed at equal distances from each other behind the limb; one just below the trochanter, another just below the knee, and a third above the ankle.

"The ends of these strips are then brought forward between the limb and the splints, carried over the anterior edges backward over the outside of the appa-

ratus, crossed behind, and finally brought forward around the whole again and tied in front. By this arrangement a sling apparatus is made for the whole limb, at the same time the splints are nicely secured to each other. The extending force is regulated by means of the screw through the block. This block, I should say, slides in a fenestrum, being secured at any part by a screw arrangement, by which means the proper distance between it and the foot can be regulated in order to have the full advantage of extension.

"This, then, constitutes Buck's modification, in other words, the New York Hospital splint, which since its first introduction into practice has never yet betrayed the confidence that has been placed in it. Perhaps the greatest addition toward perfection that it has had was the employment of the adhesive plaster; since that time, the results may be judged of from the following statement of 74 cases which involved the shaft of the femur exclusive of either extremity. These cases are taken in the order of their occurrence from the hospital records.

"Seventy-four cases have been collected.

"Of this number, 19 resulted without any shortening, the shortening in the remaining 55 averaging less than $\frac{3}{4}$ of an inch. The ages ranged from 3 to 64 years. 57 were over 12, and 17 under that age. Of the 57, there was no shortening in 13 cases, but in the remaining 44 the shortening was a fraction over $\frac{3}{4}$ of an inch. Of the 17 under 12 years, 6 resulted without shortening; the remaining 11 averaging less than $\frac{1}{2}$ of an inch shortening."

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Suggestions of Improvements in Tracheotomy.—Prof. D. Brainard offers (*Chicago Med. Journ.*, March, 1859) the following suggestions for preventing hemorrhage, and for keeping the opening made in the operation pervious without resorting to a tube:—

1. *Hemorrhage.*—In order to prevent this, Dr. B. proceeds in the following manner: "Having incised the skin and facia by successive and careful incisions, I press the sterno-hyoid and sterno-thyroid muscles to each side with the fingers, and thus expose the thyroid body. This effected, I pass under the isthmus a director curved, or an aneurismal needle. This was followed by a common suture needle, which may be passed with the blunt end foremost, armed with two very strong ligatures. A ligature is then tied very firmly on each side, and the isthmus of the thyroid body divided between them. A little dissection with a blunt instrument denudes the trachea to the required extent, and an opening can be made without danger of a drop of blood being drawn into it.

"The ligatures which have been thus secured, serve the purpose of fixing the trachea, if desirable, and they may be tied behind the neck so as to raise it forward, and keep the wound open. I never open the trachea until the hemorrhage is stopped, and a large surface of it has been quite denuded.

"2. *Keeping the opening in the trachea pervious without resorting to a tube.* The objections to a tube are twofold: 1st. When the operation is performed for the extraction of a foreign body, it prevents its exit; and it is desirable to leave this opening in such a state that the foreign substance may escape whenever it becomes loosened from its situation in the bronchia. 2d. In tracheotomy for croup, the prolonged sojourn of the tube has been considered, by the most eminent surgeons, as a cause of the pneumonias which so frequently are the cause of death.

"The necessity for using the tube I avoid by the following means: Having denuded the trachea, insert a small suture needle, armed with a ligature, beneath two of its rings. Withdraw the needle, and, drawing gently upon the thread, make a semi-circular incision on one side, so as to form a valve, readily opened by drawing upon the thread. The opening thus formed can be kept patent or be allowed to close at will.

"This is a matter, perhaps, of much greater consequence than might be supposed without reflection. Most surgeons have found their operations for tracheotomy less successful than they had reason *a priori* to expect, and this has been attributed to the direct entrance of cold air into the lungs. Trousseau and Guersent have both advised that the air inhaled at that time should be quite warm without being too hot."

Clinical study of the Heart-Sounds in Health and Disease.—The following is the summary of the conclusions arrived at by Dr. AUSTIN FLINT, from a study of the Heart-sounds in health:—

"1. The *first* sound of the heart is a mixed sound, when studied at the situation where its intensity is greatest, viz., over the apex of the organ. Comparing its characters in this situation, when the person examined is placed in different situations; when the stethoscope is placed directly on the surface, and when a soft material is placed beneath the instrument, or when it is very lightly and imperfectly applied; contrasting its characters over the apex with those in situations more or less removed from the borders of the heart, and taking into consideration modifications incident to certain diseases, and peculiar to certain persons in health, this sound is shown to be composed of two elements, one due to valvular action, and the other to the impulsion of the apex against the thoracic parietes. The first of these elements may be called the *valvular element*, and the second the *element of impulsion*.

"2. The *first* sound is almost invariably accentuated at the apex. The element of impulsion is here almost constantly predominant. The element of impulsion is also predominant, as a rule, over the body of the heart; but occasionally the valvular element becomes more or less marked, when the stethoscope is carried above the apex. At the base of the heart the valvular element is much oftener predominant than over the body of the organ. At the left border, over the nipple on the left side, the valvular element generally predominates, and on carrying the stethoscope to the left of this point, for a greater or less distance, the element of impulsion is eliminated, and the valvular element remains, leaving the sound as purely valvular in quality, and as short, as the second sound. The valvular element predominates generally at the right border of the heart, and at all the points removed from the præcordial region, where the first sound is appreciable. Although, therefore, the element of impulsion is usually predominant over the apex and body of the heart, the valvular element is alone diffused much beyond the limits of the organ.

"3. The valvular element of the first sound is less intense than the second sound, the latter being often heard in situations to which the former is not transmitted—viz., on the lateral surfaces of the chest, in the infra-clavicular region on the right side, and over the back.

"4. Over the inferior border of the heart, near the xiphoid cartilage, the valvular element of the *first* sound frequently differs in pitch from the same element of this sound when studied at, or without, the left nipple. This may be considered as showing that in the latter situation the sound emanates from the mitral, and in the former situation from the tricuspid, valves. When a disparity in pitch is presented by the first sound in the situation just named, the pitch is lower at the inferior border of the heart. When the sound in this situation is compared with that over the apex, and a difference is observed in pitch, the pitch is lower over the apex.

"5. The intensity of the *first* sound not only varies widely in different persons, but is subject to considerable variations in the same person within the limits of health, as well as in connection with disease. These variations in intensity affect especially the element of impulsion. The valvular element undergoes comparatively little change, in this respect resembling the *second* sound of the heart.

"6. The interval between the first and second sounds varies in different persons, according as the element of impulsion in the *first* sound is more or less marked. The prolongation of the first sound is due to this element. When, from any cause, this element is impaired or eliminated, the interval between the first and second sounds is lengthened. In those situations on the chest in which the valvular element is heard without the element of impulsion, this interval is distinctly longer than when the two elements are combined as they usually are over the apex.

"7. The *second* sound has an unmixed valvular quality, and is best studied over the base of the organ, where its relative intensity, in most persons, exceeds that of the first sound. The points where its characters are generally best

marked, are the intercostal spaces between the second and third ribs on the two sides, near the sternum.

"8. On comparison of the *second* sound on the two sides at the points just named, a difference in pitch and other characters is generally apparent. This fact, taken in connection with the anatomical relations of the aorta and pulmonary artery at these points, and also with clinical facts pertaining to disease, leads to the conclusion that when such a disparity exists, the characters of the sound on the left side are due to the action of the valves of the pulmonary artery, and the characters of the sound on the right side, proceed from the aortic valves.

"9. The *second* sound presents the characters of that produced at the orifice of the pulmonary artery, in a small proportion of instances in the third intercostal space on the left side, and over the body of the heart in the superficial cardiac region. In a larger proportion of instances it presents these characters over the inferior border of the heart. Elsewhere, within the præcordia, and at points removed from the præcordial region, wherever the *second* sound is heard, it presents the characters distinctive of the sound produced at the aortic orifice.

"10. The *second* sound is not subject to great variation, even as regards its intensity, in the same person, and it maintains its distinctive characters unaffected by the causes which affect the movements of the heart within the limits of health, such as exercise, mental agitation, &c. It remains unchanged under circumstances which alter considerably the characters of the *first* sound.

"11. Although generally the relative intensity of the *second* sound, is notably greater over the base than over the apex of the heart, the absolute intensity of this sound is often not less, and sometimes even greater over the apex, than over the base. It may even be accentuated in the latter situation in health.

"12. It follows from facts contained in this summary, that the *second* sound produced at the aortic orifice has a degree of intensity much greater than that at the pulmonary orifice; and it also follows from facts contained in this summary, that the intensity of the valvular element of the *first* sound is due to the mitral, much more than to the tricuspid valves."

The following is the summary of conclusions relating to the heart-sounds in disease.

"1. The two elements which compose the *first* sound of the heart, viz., the valvular element and the element of impulsion, may be affected conjointly but unequally; or one element may be affected exclusive of the other, and either may be extinguished while the other remains.

"2. Of the two sounds which unite to form the valvular element, viz., the mitral and the tricuspid, the former may be abnormally diminished in intensity, or extinguished, while the latter continues, and its intensity is in some instances greater than in health. When this is the case, injury or destruction of the mitral valves is indicated. An abnormal intensity of the tricuspid sound, under these circumstances, denotes hypertrophy of the right ventricle, and there will probably be found, at the same time, exaggeration of the pulmonary *second* sound of the heart.

"3. To determine whether weakness or extinction of the mitral valvular sound be due to injury or destruction of the mitral valves, or to diminished muscular power of the heart's action, this sound is to be compared with the element of impulsion. If the latter element, over the apex of the heart, be well marked, while the valvular element without the left nipple, be feeble or wanting, it is to be inferred that the mitral valves are more or less seriously damaged. This inference, however, is not to be drawn if it be suspected that the mitral sound is not appreciable or imperfectly heard, in consequence of the intensity, roughness, or diffusion of a co-existing murmur.

"4. On the normal intensity of the mitral valvular sound, when a murmur is present, referable to the mitral orifice, may be predicated the opinion that the abnormal changes giving rise to the murmur, have not, as yet, compromised seriously the integrity or function of the mitral valves.

"5. When morbid conditions exist, organic or inorganic, which intensify the *first* sound of the heart, in hypertrophy and functional disorder, the intensity of both elements of this sound is increased, but the element of impulsion is exag-

gerated disproportionately to the valvular element. So, also, when the muscular power of the heart is weakened by any cause, the auricular valves remaining unaffected, the element of impulsion is enfeebled more than the valvular element, and the latter is sometimes lost when the former is still appreciable. Both elements, however, may be extinguished by causes which weaken the muscular power of the heart, while the *second* sound continues to be heard in different situations.

"6. If, from any cause, the *first* sound be weakened so as to extinguish the element of impulsion but not the valvular element, this sound, in duration and quality, resembles the second sound. When this is observed over the apex of the heart, where the element of impulsion is most marked in health, it does not follow that the heart is dilated. Weakness of the systolic movement is alone indicated, and this change in the duration and quality of the *first* sound, at the point stated, occurs in cases of great hypertrophy as well as dilatation, if the muscular power of the organ be sufficiently impaired. The same change may occur when the muscular power of the heart is impaired by fatty substitution, softening, and by dynamic causes.

"7. Abnormal intensity of the element of *impulsion* occurs when the muscular action of the heart is increased from any cause. Mere abnormal intensity may not indicate more than the increased action due to functional excitement, but if the *first* sound be notably prolonged and dull (characters which depend on the element of impulsion), hypertrophy is indicated. The absence of these characters, however, is not evidence against the existence of hypertrophy, since the muscular power of the organ may be diminished to an extent to weaken and even extinguish the element of impulsion, when the organ is greatly hypertrophied.

"8. The *second* sound of the heart being constituted by a valvular element alone, is not subject to modifications which are practically important, except as regards its intensity and the degree of valvular quality. It may be exaggerated, weakened, or extinguished, and the valvular quality more or less marked.

"9. The *second* sound emanating not from one source, but consisting of an aortic and pulmonary sound, which are distinguishable from each other in certain situations in health, the abnormal modifications may relate to either, exclusive of the other. The aortic and pulmonary sounds may be separately increased or diminished in intensity, and each may be extinguished, the other remaining.

"10. Extinction of the aortic sound, the pulmonary sound not being suppressed, denotes destruction, or very serious injury of the aortic valves. This conclusion is corroborated by the presence of a murmur referable to the aortic orifice.

"11. Abnormal weakness of the aortic sound denotes injury to the aortic valves, especially if an aortic murmur be present, provided that this weakness be not attributable to mitral contraction or regurgitation, or to impaired muscular power of the heart. The presence or absence of mitral disease may generally be determined by the presence or absence of a murmur referable to the mitral orifice, and to determine whether the weakened aortic sound be due to impaired muscular power of the heart, this sound may be compared with the pulmonary sound, which, in health, is feebler than the aortic. Evidence of enfeebled action of the heart is also obtained by observing the *first* sound. The second sound of the heart, however, is comparatively much less affected by the various conditions which involve impairment of the muscular power of the organ, than the *first* sound.

"12. On the normal intensity of the aortic sound may be predicated an opinion that the aortic valves are sound. When this sound is found to retain its normal intensity, in connection with a diastolic murmur, the fact renders it probable that the murmur is produced by the direct current of blood through the mitral orifice, and not by aortic regurgitation. When the normal intensity of this sound continues, in connection with a systolic murmur referable to the aortic orifice, it shows that, although a lesion exists in this situation, it has not, as yet, led to serious change of the valves.

"13. Exaggerated intensity of the aortic sound occurs in cases of hypertrophy affecting the left ventricle so long as the muscular power of the organ is not

impaired. This alone, however, is not a sign of hypertrophy, for the sound is also exaggerated when, from any cause, the power of the heart is increased.

"14. Abnormal modifications of the pulmonary sound relate, so far as their importance practically is concerned, to an increased intensity of this sound. When it is found to be relatively more intense than the aortic sound, it denotes either that it is positively exaggerated, or that the aortic sound is abnormally weakened, or both these conditions may exist. If the aortic sound be not abnormally weakened, greater relative intensity of the pulmonary sound is evidence of hypertrophy of the right ventricle. In connection with this exaggeration, the tricuspid portion of the valvular element of the first sound will be likely to be intensified. Whether a greater relative intensity of the pulmonary sound be due to a positive exaggeration, or to diminished intensity of the aortic sound, or to both combined, it is generally observed in cases of mitral disease attended by either obstruction or regurgitation. This rule, however, is not without exceptions."

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Hypophosphite of Quinia.—Dr. J. Lawrence Smith calls attention (*Semi-Monthly Med. News*, May 1, 1859) to a new salt of quinia—the hypophosphite. This he states "was first made by adding an excess of recently precipitated quinine to a hot solution of hypophosphorous acid, and on cooling, the salt crystallizes out in beautiful silky tufts, which, when dry and broken up, resemble asbestos in appearance. The method adopted and proposed for making it on a large scale, is by double decomposition; using the sulphate of quinine and the hypophosphite of baryta, the operation must be conducted so that there shall be no excess of either salt in the solution; the solution is filtered from the sulphate of baryta, concentrated and allowed to crystallize, which it does in the manner already mentioned.

"The salt thus obtained is in delicate fibrous crystals, soft to the touch; they are of a beautifully silky lustre, very soluble in hot water; one ounce of cold water at 60° Fahr. dissolves 8 grains of the salt. When heated, it loses its water at about 230°, and at about 300° it turns brown and melts."

He suggests the use of this preparation in the hectic fever of phthisis, and wherever quinine is useful. Dr. S. has been led to make this combination from the efficacy claimed by Dr. Churchill for the hypophosphite in phthisis.

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Acids existing in the Juices of Rhubarb Stalks, Tomatoes, and Quinces.—Mr. T. A. Lancaster has published (*American Jour. of Pharm.*, May, 1859) his investigations on this subject, from which it appears that one pound of rhubarb (*Rheum rhaponticum*) stems yielded thirteen ounces of juice, which produced seventy grains of crystallized bin-oxalate of potassa.

One pound of quinces (*Cydonia vulgaris*) yielded twenty-five grains of crystallized bimalate of lead.

One pound of tomatoes (*Solanum lycopersicum*) yielded eleven ounces of juice, which produced ten grains of crystallized acid malate of lime, besides an unascertained amount of acid citrate of potassa.

FISKE MEDICAL PRIZE QUESTIONS.

THE TRUSTEES OF THE FISKE FUND,

AT THE

ANNUAL MEETING OF THE RHODE ISLAND MEDICAL SOCIETY,

Held at Providence, June 1, 1859, announced that the premium of Two Hundred Dollars offered by them, in 1858, for the best dissertation on the following subject:—

THE EFFECT OF THE USE OF ALCOHOLIC LIQUORS IN TUBERCULAR DISEASE, OR IN CONSTITUTIONS PREDISPOSED TO SUCH DISEASE, had been awarded to the author of the dissertation bearing the motto—

"*Occasio præceps experientia fallax judicium difficile.*"

And upon breaking the seal of the accompanying packet, they learned that the successful competitor was John Bell, M. D., of New York.

They propose the following subjects for 1860:—

1. DIPHTHERIA; ITS NATURE AND TREATMENT, WITH AN ACCOUNT OF THE HISTORY OF ITS PREVALENCE IN DIFFERENT COUNTRIES.

2. THE MORBID EFFECTS OF RETENTION IN THE BLOOD OF THE ELEMENTS OF THE URINARY SECRETION.

For the best dissertation on either of these subjects the Trustees will pay the sum of One Hundred Dollars.

Every competitor for a premium is expected to conform to the following regulations, viz:—

To forward to the Secretary of the Fiske Fund Trustees, on or before the first day of May, 1860, free of all expense, a copy of his dissertation, with a motto written thereupon, and also accompanying a sealed packet, having the same motto inscribed upon the outside, and his name and place of residence within.

Previously to receiving the premium awarded, the author of the successful dissertation must transfer to the Trustees all his right, title and interest in and to the same, for the use, benefit and behoof of the Fiske Fund.

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The Peninsular and Independent Medical Journal. Edited by Drs. A. B. Palmer, Moses Gunn, and Mr. F. Stearns. July, August, September, 1859.

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The American Journal of Dental Science. Edited by Drs. C. A. Harris and A. Snowden Piggot. July, October, 1859.

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2. Transactions of the Third Session of the Medical Society of the State of California, convened at San Francisco, February, 1858. 8vo. pp. 168.
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ART. I.—*Contributions to Pathological Histology.* I. *On Suppuration in Cancerous Growths.* (Read before the Biological Department of the Academy of Natural Sciences of Philadelphia. March 21, 1859.)—II. *Remarks on the Anatomy of Five Cases of Non-Cancerous New Formations of Connective Tissue.* By J. J. WOODWARD, M. D., of Philadelphia.

I. *On Suppuration in Cancerous Growths.*—Fluids, resembling pus in external appearance, are frequently found in connection with carcinomatous growths. To the eye they present the most diversified aspect. Sometimes they are yellowish and creamy, like healthy pus; sometimes thinner, approaching the characters of sanies or ichor. Their anatomical relations to the growths in which they occur are variable. They may be contained in one or more cavities of greater or less size, or may be discharged from the surface of a cancerous ulcer.

Notwithstanding their outward aspect, however, these fluids are often quite distinct from pus in their essential nature, and the process by which they are formed is then altogether different from suppuration. Frequently, they are best described by the words *softened cancer matter;* a term applicable to many specimens which the most practised eye, unaided by the microscope, would be disposed to regard as laudable pus.

The morphological elements found in such cases are exceedingly diverse. The only forms discernible may be innumerable Aschersonian vesicles of variable size, with, perhaps, a few cholesterin plates, or crystals of the ammoniaco-magnesian phosphate; or, in addition to these forms, angular, granular nuclei, not unlike those of tubercle, may be observed in greater or less abundance, as, for example, in the case detailed by me in an article

entitled "Remarks on the Anatomy of a Case of Retrograde Cancer." (See *Am. Journ. Med. Sci.*, April, 1859.) Sometimes, also, besides the above forms, nuclei, and nucleated cells, of multiform configuration, variable size, and in a state of fatty degeneration, more or less complete, can be found.

As in soft cancer (medullary carcinoma) the anatomical elements are much more loosely held together than in hard (scirrhus), it might be anticipated that a much less degree of fatty degeneration would be necessary to reduce the texture to the purulent consistence in the cases belonging to the former category; and in fact observation demonstrates that the pseudo-pus found in connection with hard cancer most frequently presents merely Aschersonian vesicles or a few shrivelled nuclei, while in medullary it often contains the higher forms above enumerated.

The process by which such fluids as these are formed in cancer is simply *fatty degeneration*, a process always present in these growths, determined by certain momenta concerning which we are at present obliged to confess our ignorance, though this much at least may be positively stated, that it is not dependent upon such circulatory disturbance as would justify the use of the term inflammation.

But besides the formation of such pseudo-pus, a true suppuration may go on in cancers resulting in the formation of a genuine *pus* characterized by the usual morphological elements, and these may occur quite unmixed or variously mingled with the elements of softened cancer. I have as yet only observed this in connection with cancerous ulcers, as in the following case:—

CASE. *Cancer of the Left Breast extirpated at the Clinic of the University of Pennsylvania.* By Prof. HENRY H. SMITH, Wednesday, February 16, 1859.

History of the Case.—The patient was a robust, healthy looking Irish woman, 40 years of age; a widow, who during her married life had borne one healthy child. None of her relations, so far as she knew, had suffered from tumours of any kind.

The disease occupied the whole of the left breast, which formed a tumour about twice the size of the normal gland. This mass was hard, heavy, and somewhat adherent to the pectoral muscle. Several large ulcers of irregular shape were situated near the nipple, which was much retracted. The skin around these ulcers, to the distance of several inches, was thickened and tuberculated, of a florid red colour, and painful to the touch.

Besides the tumour, the patient presented no points of surgical interest. There was no enlargement of the lymphatic glands either of the axilla or neck; her menstruation was regular and had never given her trouble, and her general health was good.

She related that she had never noticed any tumour in the breast until about a year previously, when she had an attack of intermittent fever. During the paroxysms of the fever she suffered greatly from pain in the breast; and upon one occasion, putting her hand to it during a violent pain, she noticed that there was a hard, movable lump, about three quarters of an inch in diameter, imbedded in the substance of the gland.

After her recovery this lump continued gradually to increase in size, but without being the seat of severe pain, or causing any very serious inconvenience, until about two months before she came to the University. It then began to enlarge more rapidly than before; the skin became red and tender, the tumour was hot and exceedingly painful, and ulceration commenced.

After the commencement of the ulcerative process the tumour did not enlarge as rapidly as before, and was less painful.

At the time of the operation the ulcers were of some size and depth, with abrupt jagged edges, irregular in outline, and undermined at many points. The granulations were pale and unhealthy, and the sores discharged a thin pinkish yellow fluid, resembling unhealthy pus.

Prof. Smith excised this breast in the usual manner. On account, however, of the extent of the disease, so much of the integument was necessarily removed as to render it impossible to close the wound, which was, therefore, allowed to fill up by granulations.

Remarks on the history of the case.—The above history presents several points of interest. Especially would I call attention to the absence of any of the symptoms usually attributed to the so-called cancerous cachexia.

Notwithstanding the amount of evidence collected to show that widespread carcinomatous disease may exist for many years, without these symptoms, there are still many surgeons who invariably take the presence or absence of the cachexia into account in making their estimate of a case.

My own studies have compelled me to conclude that not only may cancer run its course, even to a fatal issue, without any peculiar symptoms deserving the name of cachectic, but that the absence of the symptoms of the cachexia is by no means a legitimate reason for making a favorable prognosis as to the probable duration of life in any case.

A robust, well-developed frame, good general health, and great powers of endurance are by no means incompatible with the most terrible progress of the carcinomatous affection, as evinced by a return of the disease a few weeks or months after the operation, with a rapid development of the secondary growths terminating in sloughing, hemorrhage, and speedy exhaustion of the vital powers. In illustration of these facts I would refer to the history of the old sailor, recorded in an article entitled "Remarks upon the Minute Anatomy of Three Cases of Cysto-Carcinoma," published by me in the *American Journal of Medical Sciences*, July, 1858.

It is a matter of interest to inquire how far the symptoms of the so-called cachexia, in the cases in which they exist, are dependent upon *cancerous infiltration of certain internal organs;* a question which I am not prepared to meet in detail in this place.

Another point of interest to which attention may be directed is the *side affected.* This tumour involved the left breast. In a single case this may be a matter of small moment, but it assumes interest when it is stated that *the left breast is most frequently* the *seat of the disease.* Thus, five mammary glands were extirpated by Prof. H. H. Smith, at the Clinic of

the University of Pennsylvania, during the session of 1858–9, the seat of the disease being in every case the left side. Four of these cases have been published by me in the January and April numbers of this journal. The fifth was a case of non-ulcerated scirrhus of the breast, which presented nothing remarkable. Three of these five breasts were undoubtedly cancerous; one was considered non-cancerous, and one doubtful. Inflammations of the breast have the same disposition as tumours to attack the left rather than the right breast. I believe it is generally admitted that mammary abscess is most frequent in the left breast. The full significance of these facts is undoubtedly not ascertained. At least, however, this much may be said, that in this particular, as in many others, cancerous growths follow the same general laws recognizable in other disorders.

Anatomy of the growth.—The growth, being incised from behind, presented the following conditions to the naked eye:—

The mammary gland was small, shrunken, and irregular in shape, and connected at the nipple with the thickened and diseased skin. Its cut surface was yellowish-white in colour, and yielded, when scraped, a creamy juice.

The skin, connected with the mammary gland as above stated at the nipple, was everywhere else separated from it by the healthy, abundant, adipose tissue in which the gland was imbedded. It was thoroughly diseased, being nodulated upon the external surface, and extending irregularly inwards between the groups of adipose cells. Its thickness varied much, amounting in many places to as much as three-quarters of an inch. Its cut surface closely resembled that of the diseased gland, and when scraped permitted a similar creamy juice to exude.

The external surface of the diseased skin, moreover, presented the *ulcers* described in the history of the case, the description of which need not here be repeated.

Careful study revealed the following minute conditions:—

The *creamy juice*, whether obtained by scraping the cut surface of the gland or of the thickened skin, exhibited the following morphological elements.

a. Free nuclei of great size (average diameter $\frac{1}{2000}$ of an inch). They were rounded, oval or rounded oblong in shape, and when examined without reagents, in the unaltered juice, or in the fluid of hydrocele, appeared to have colourless, transparent, or slightly granular contents.

The nucleoli, most frequently single, but occasionally double or plural, were of large size (about $\frac{1}{10000}$ of an inch), shining and spherical or rounded oblong in shape.

Water rendered the walls of the nuclei more distinct, and the contents dimly granular.

Acetic acid, rendering the walls still better defined, caused the contents to become so granular as to obscure somewhat the nucleoli.

b. Large irregular CELLS ($\frac{1}{1000}$ inch *average* length), of the most varied shape, oval, spindle-shaped, oblong, and irregular, with more or less granular contents, and one, two, or three nuclei identical with those above described.

These are the so-called "cancer-cells," and in this case answered well to the usual description. I have elsewhere (see *Am. Journal Med. Sci.* for January, 1859, article "On the Anatomical Diagnosis of Cancer") shown

my reasons for not regarding them as specific cells, but simply as distorted young connective tissue elements.

Water rendered these cells paler, at the same time that the nuclei became dimly granular, and their contents more distinct.

Acetic acid at first rendered both cells and nuclei exceedingly granular, but its more prolonged action ultimately rendered the cells pale, or caused them totally to disappear; while the nuclei remained distinct and granular, as in the case of the free nuclei above described.

c. A few delicate spindle-shaped cells, the ordinary embryonic elements of connective tissue.

d. Aschersonian vesicles in great number.

Thin sections cut from the diseased gland showed the same elements as those observed in the juice, lying, as usual, in a stroma of well-developed connective tissue.

Thin sections cut from the thickened skin exhibited similar conditions, the distended areolæ of the connective tissue of the cutis vera being thoroughly filled with the above described elements. Whether in the juice obtained by scraping, or in thin sections, the skin *afforded no elements which possibly could be confounded with the ordinary exudation corpuscle, or with pus.*

It may here be observed that the yellow elastic tissue appeared much more abundant in proportion to the white fibrin in the stroma of the cancerous skin, than in the stroma of the cancerous breast.

This fact, else utterly inexplicable, becomes at once clear when it is borne in mind that the stroma of a cancer often represents, to a certain extent at least, the pre-existing connective tissue of the part, and that the skin contains naturally much more yellow elastic tissue than the mammary gland, the fibres being not only more numerous but of greater diameter.

The surface of the ulcers in the skin yielded when gently scraped the purulent looking fluid described in the history of the case. In this fluid great numbers of *pus corpuscles* were observed. Some of them were misshapen and irregular, but the vast majority spherical, and indistinguishable from those found in the pus of a healthy wound or of an ordinary abscess.

They were spherical in shape, granular in appearance, and exhibited when treated with dilute acetic acid the usual single, double, triple, or quadruple nuclei.

Intermingled with these corpuscles, especially in the later scrapings, when the knife pressed rudely upon the surface of the granulations, were small numbers of all the morphological elements above described, as found in the creamy juice obtained by scraping the cut surfaces of the growth.

The granulations themselves consisted chiefly of the nuclei and cells above described at *a* and *b*, which in the deeper parts of the texture lay in the meshes of a stroma of connective tissue continuous with that of the whole growth.

Remarks on the anatomy of this growth.—It will be borne in mind that two months before this breast was removed, the patient was attacked with all the ordinary symptoms of inflammation in the tumour.

The redness of the skin, with the rapid enlargement of the growth following it, were indications of considerable circulatory disturbance, with consequent increased exudation. The heat and pain accompanying these

phenomena would have led any one, had the seat of the affection been in a normal tissue, to describe the condition as inflammation; and this judgment would have been confirmed by the subsequent ulceration.

If the discharge from these ulcers had been microscopically examined, this opinion would have been abundantly confirmed. The discharge in every essential particular was PUS.

If now inflammation be one separate and distinct process, and cancer formation another, as is ordinarily believed, the *à priori* expectation would be that careful investigation could recognize the characteristic elements of inflammatory exudations in the affected parts.

But instead, the most earnest and unprejudiced examination of the tumour, and especially of the thickened and diseased skin in which the inflammatory symptoms were most striking, discovered no exudation corpuscles, none of the ordinary anatomical conditions which it is customary to find in inflammatory exudates developing or developed into tissue, but *cancer structure* differing in no one essential particular from cancerous tissue formed under ordinary circumstances.

Nor, indeed, is the case unique in this particular. It has not escaped the careful eye of Rokitansky, that while in the majority of instances cancerous growths form slowly and insidiously, without vascular disturbance, without heat and redness, yet that in others the process occurs far more turbulently, and that the exudation takes place from congested and turgid bloodvessels, with the general external phenomena of inflammation. (See Rokitansky, *Path. Anat.*, Phila. edit., vol. i. p. 197.)

If, then, I should describe the process going on in the red and thickened skin of this patient, I would not call it inflammation in a cancerous growth, but turbulent or acute cancer formation. And if I should attempt to present in detail the minute conditions existing, I should say that the only essential difference between this and ordinary cancer formation lay in the quantity of blastema furnished, and the rapidity with which it was appropriated.

It is, moreover, to be observed that while this blastema was thus turbulently exuded from the bloodvessels of the skin, and organizing into cancer, a simultaneous exudation was going on from the vessels of the granulations in the cancerous ulcer, and this exudation was converted into PUS.

If these circumstances be rightfully considered, it appears to me that they are not without a certain degree of doctrinal significance. It is well known that the phenomena of cancer are very generally explained by describing it as a disease of the blood, stating that in consequence of the contamination of the circulatory fluid the exudation is peculiar, and that the special structural conditions resulting are the inevitable consequences of those peculiarities in the exudation which stamp it as the "cancer blastema."

To this humoral doctrine of cancer, which in one shape or another is

widely diffused among the physicians of the world, certain observed phenomena are inevitably antagonistic. And this antagonism deserves the more earnest consideration from unprejudiced men, because, as must be confessed at the outset, the humoral doctrine of cancer is strictly teleological in its origin, and has its foundation in an argument which even Rokitansky has confessed rests upon slender anatomical data. (*Loc. cit.*, pp. 298.) For all parties are, I believe, agreed that nothing special has been detected either morphologically or chemically in the blood of cancerous patients, or in the blastema of cancer, which agrees in every essential, so far as is known, with that of other new formations.

Among these antagonistic phenomena may, I think, be placed that just noted as occurring in the case under consideration.

We have here in a morbid growth the exudation of blastema occurring turbulently in connection with circulatory disturbance. A part of the blastema becomes cancer; a part becomes pus. If we explain the genesis of the cancerous structure by pronouncing it the inevitable manifestation of the inherent tendency of the blastema, how shall we account for the pus formation? If, however, taking into consideration that only the portion of blastema which was poured out into the living textures became cancer, while that escaping on the surface of the ulcer became pus, we attempt to account for the diverse destiny of the two portions by the diverse conditions to which they were submitted, we take the guiding force away from the blastema, and assign it to the local influences, and a purely humoral doctrine of cancer becomes no longer tenable.

Many other difficulties lie in the way of the reception of purely humoral doctrines, which it would be here out of place to state at large, since our business is chiefly with the phenomena and teachings of "suppuration in cancer." As an example of such difficulties, however, the fact of the rapid and healthy healing process which habitually occurs in the wounds made by the surgical removal of cancerous growths may be instanced.

It remains to be asked if there is any mode of regarding the phenomena of suppuration in cancer, by which they can be seen to harmonize with the other phenomena of cancerous and other growths?

It appears to me that this question may at once be answered in the affirmative, if we regard cancer from the new stand-point of its essential homology with the connective tissue new formations.

If cancer be a malformed new formation of connective tissue, and not a heterologous structure, as has so long been believed, we cannot be surprised that cancer formation should under certain circumstances be associated with other morbid formations, the relation of which to the pathological production of connective tissue is now fully recognized by the best pathologists.

There was a time when *pus* was considered a specific and peculiar product of disease, as cancer so generally now is. Ignorant of its anatomical

peculiarities, the earlier observers were driven to consider it as a special secretion from the inflamed parts. But it has been known for some years that whenever ordinary pathological connective tissue formation is checked at a certain stage, the spherical formative cells (exudation corpuscles) come to be what are called pus corpuscles; and a process of fatty degeneration, which affects chiefly the fluid blastema, converts the liquid into pus. This fact is tolerably described by certain authors, who speak of pus as a fatty degeneration of lymph, a mode of expression not broad enough to cover all the facts of the case, since the characters which render the semi-organized exudation *pus* are often stamped upon it from the earliest moments of its existence.

In investigating the conditions which determine pus formation out of an exudate instead of complete connective tissue production, it will be found that local influences play a very conspicuous part, and among these exposure of the exudate upon a free surface to the atmospheric air cannot be overlooked. Under ordinary circumstances pus is always formed, if *any* forms are produced in such fluids.

The relation of pus to *healthy* new formations of connective tissue is well known, and familiarly exemplified in the case of the granulating wound or ulcer.

It appears simply from the pointings of such cases as that above recorded, that a *similar relation may exist between pus and the distorted and diseased new formation of connective tissue, which we call cancer.*

With these few hints I dismiss the subject for the present; but as the study of suppuration in cancer appears to me to promise fruitful results, I trust to be able to recur to it hereafter.

II. *Remarks on the Anatomy of Five Cases of Non-cancerous New Formations of Connective Tissue.*—No subject presents greater interest to the student engaged in investigating the homologies of cancer, than the anatomy of those new formations, which, approximating cancerous growths in minute structure, differ essentially from them in their destiny and clinical history.

If Carl Wedl's doctrine of the homology of cancer with connective tissue be available, the study of non-cancerous new formations of connective tissue assumes fresh significance. This vast class of pathological formations, already important on account of their frequency, and the grave constitutional disturbance with which they are so often accompanied, demands from this stand-point new and unbiassed investigation.

Well worthy more attention than they have received for their own sake, they deserve fresh consideration as furnishing a key to the doctrinal significance of the famous group of so-called heterologous growths.

No other new formations compare in frequency with those of connective tissue; and none suggest at every step of their study more profound and

perplexing questions. Their infinite variety of aspect and origin has led observers, especially the earlier and more superficial, to classify them into numerous categories, each of which has unfortunately been elevated by many subsequent writers to the dignity of an independent and peculiar entity, an error which, like every attempt to set up distinctions where none exist in nature, has led to inevitable confusion.

There is apparently in these times but one way of escaping the labyrinth of intricacies in which the subject is involved in too many of the books, and that is never to lose sight of normal histogenesis while studying pathological growths. An intelligent study of pathological new formations of connective tissue only becomes possible after an earnest investigation of the development of normal connective tissue in the embryo. Whoever will give due consideration to these preparatory subjects, when he begins to observe the growths of this class which occur in disease, cannot fail to be struck with the unity of plan perceptible in the development of all. In fact, whether he observe the manifold developing products of acute and chronic inflammations, or those new formations, such as many indurations and tumours, which are evolved more slowly, without that evident circulatory disturbance which is regarded as characteristic of the inflammatory act; whether he look at those slowly produced and painless masses which, when once extirpated, never return, or consider the more formidable group of semi-malignant and malignant growths; he will, in every case, be able to satisfy himself that in all essential particulars, the pathological growth arises by a series of steps identical with the development of the normal tissue, and that all the diversity of external appearance observable can be accounted for on the supposition of exaggerated evolution on the one hand, and premature or excessive involution on the other.

The limited purpose of the present article will not permit the full elucidation of this large subject. It is only proposed to present a few considerations based upon the study of a limited number of cases of new formations belonging to this class, whose minute anatomy appears to throw some light on the homologies of cancer.

If the development of connective tissue in a pathological exudation took place in precisely the same manner as the same tissue is developed in the embryo—if no disturbing circumstances interfered with evolution till it was complete—if involution did not commence until development was accomplished, the perfected products of the process would be fully developed ADULT connective tissue, such as we find it in the normal anatomy of the body. We should be able to discriminate the well-developed bundles of white fibrous tissue, and intermixed with these more or less abundant yellow elastic fibres would probably be observed. Such is in fact, to select one of many examples, the tissue which forms the cicatrix of most wounds. It is developed out of the spherical granular cells (lymph cells—exudation corpuscles) which arise in the abundant liquor sanguinis (plastic lymph—

reparative exudation) poured out from the adjacent bloodvessels, by a chain of transitions which are step for step isomorphous with those by which the primitive cells of the embryo are metamorphosed into the same tissue. It frequently happens, however, in pathological new formations of connective tissue that although development commences according to the normal type, and does not essentially deviate from it so far as it goes, yet the process is not completed, the development is arrested, in a word *evolution is incomplete.*

The phenomena which result from incomplete evolution vary greatly in accordance with the stage of the process at which arrest of development takes place, and in accordance with several variable coincident circumstances. An illustrative example may be found in what often happens in the progress of the development of reparative materials. Cell-development may begin in the exuded liquor sanguinis, but the spherical cells resulting may never elongate. Development may be arrested at this stage, fatty degeneration of the nitrogenized ingredients of the exudation occur, coincident with this incomplete evolution, and, perhaps, determining it, and PUS is the result.

The process of *suppuration* is then in this case (and probably always) intimately allied to the pathological development of connective tissue.

I desire, moreover, in this place to lay great stress upon the fact that the incomplete evolution of the elementary forms of a new formation of connective tissue by no means necessitates the death of the developing exudation. The case of pus just cited might perhaps lead to this idea, if we looked no farther, but more thorough investigation will correct the erroneous impression. Indeed, putting the case of cancer, the homology of which with connective tissue is not generally admitted in this country, entirely out of the question, no intelligent minute anatomist can honestly study the vast class of benignant new formations of connective tissue, the homology of which is generally, if not universally admitted, however they may be disguised by pathologists under such names as fibro-plastic, fibro-cellular, recurring fibroid, &c. &c. &c., without being struck with the fact that growths constantly occur in which spindle-shaped and caudate cells, the ordinary embryonic forms of connective tissue, are at a maximum, and the fully developed fibrous elements at a minimum.

In some cases, in which the growth has occurred rapidly, and is still making progress, it is fair to suppose that had not the death of the patient, or the knife of the surgeon brought the specimen into the laboratory of the pathologist, development would have gone on to completion, and the perfected result of the process would have been a mass of well-formed fibrous tissue. But in other cases no such supposition is possible. The growth may have remained stationary, or may have increased in size but moderately during a period of *a number of years*, and yet minute investigation may show that all or most of the elementary forms are still in a

comparatively early stage of embryonic development. Such growths are often quite vascular—they are living tissues in every proper sense of the word, but besides their bloodvessels, the microscope exhibits in them no other elements than granules, free nuclei, and round, oval, spindle-shaped, or caudate nucleated cells. Between such growths and those in which fully developed connective tissue forms the chief or even the sole element, every possible transition may be observed, but I wish in this place chiefly to insist upon the frequent existence of growths which as to mere time are *old*, but which in the degree of development to which their elementary forms have attained, from the anatomical point of view, in a word, are *young*.

Any supposition as to the cause of this circumstance would, at the present time, be purely conjectural, and therefore unprofitable; but of the fact itself, there can be no doubt, and it justifies the general statement that the *development of the form elements in pathological connective tissue may be arrested at an embryonic stage without being necessarily accompanied by the death of the whole growth, or of the individual elementary forms.* Simple as this idea appears, and inevitably as it flows from the facts of the case, there are not wanting those who find it difficult of comprehension. The elements of a growth, say they, "which has been slowly growing for ten or fifteen years, can hardly be regarded as on a par with YOUNG connective tissue."

By myself at least, however, as the foregoing paragraphs will satisfy the reader, the term YOUNG connective tissue is used for brevity, to signify connective tissue, the elements of which are still in an undeveloped and embryonic stage; and as it is employed solely with reference to *degree of development* as determined wholly on *morphological data*, and not in any way with reference merely to time, as regarded apart from evolution, it follows that a new formation of connective tissue, the evolution of which is incomplete, may conveniently be called *young*, irrespective of the period of time for which it has existed.

I have especially insisted upon these facts in the biography of growths belonging to the category of connective tissue, and design to illustrate them by a few examples, on account of the light thrown from this point of view upon the question of the homologies of cancer, to which I have elsewhere briefly referred. ("Anat., Diagnosis of Cancer." *Am. Jour. Med. Soc.*, Jan. 1859.) If cancer is to be referred to the category of connective tissue growths, the supposition of arrested development at various stages in the embryonic forms becomes, among other influencing circumstances, absolutely essential to account for the variety of form among the elements which has been so much insisted upon, among modern observers, in justification of that favoured notion of heterology which has been handed down from a period antecedent to the origin of pathological histology.

It would appear to me that any objection to the reception of this doctrine on the ground that it supposed an *undemonstrated* possibility in order

to be able to account for the phenomena observed, is at once overturned if it be shown that a similar irregular arrest of development may occur in growths the homology of which is on every side acknowledged, and the question of the homology of cancer becomes then, as it should properly be, *a purely morphological question, depending for its ultimate solution solely upon anatomical investigation.*

In this respect it differs widely from the *pathology* of cancer. Large ideas of the pathology of any disease, are quite beyond the reach of the *mere* morbid anatomist. Clinical history here becomes important, for *it often happens that new formations, anatomically the most similar, are accompanied by the most diverse phenomena.* But the question of the homology or heterology of any new formation, is a purely structural one, upon which clinical history throws no light.

With these brief preliminary remarks, I proceed at once to the discussion of the cases referred to :—

Case I. *Small Subcutaneous Tumour of the Eyebrow. History of the Case.*—A young gentleman of good general health and temperate habits, presented himself to me in the summer of 1857 with a tumour, the size of a large pea on the outer part of the left eyebrow, which had been growing for several years. It was not painful, and the skin covering it was healthy. Notwithstanding its apparent hardness, it was believed by me, prior to the operation, to be a sebaceous cyst; for such cysts, when of small size, are often exceedingly firm, and communicate to the touch a sense of solidity which is sometimes quite deceptive. The tumour was removed through a single straight incision, and the patient has not been troubled by any return of the disease.

Anatomy of the growth.—When a section of the little tumour was made, it was found to be solid throughout, resisting to the knife, and presenting an opaque grayish-white surface. It was enveloped with a distinct vascular capsule, which everywhere separated it from, and at the same time connected it with, the surrounding subcutaneous adipose tissue. The cut surface, when scraped, yielded no creamy juice, but a small quantity of a colourless liquid exuded in which minute fragments could be discerned with the naked eye.

The following minute conditions were observed: The vascular capsule was composed of connective tissue in which the white fibrous element was especially well developed. Fully formed bundles of white fibrous tissue interlaced together, constituted in fact the chief part of the capsule; but with these were associated a small number of cells and nuclei similar to those about to be described.

The substance of the tumour, as examined by teasing or by scraping, was found to present no fibres, but to be wholly composed of granules, nuclei, and nucleated cells.

The free nuclei were exceedingly abundant, even more so than the cells. They were sometimes collected together in considerable masses, in which but few cells could be found. In shape they varied greatly; some were round, some oval, some oblong, others quite irregular. Their contents were clear or dimly granular, and they contained generally one or two, but sometimes several point-like nucleoli. Their size varied greatly, the largest presenting a diameter of $\frac{1}{3500}$ of an inch.

The cells, which were rather more granular in appearance than the nuclei, were of the most various shapes—round, oval, caudate, and elongating into fibres. Many of them were more or less angular, apparently deformed from mutual pressure. Each contained but one nucleus, no cell with two or more nuclei being observed. The largest of the rounded oval or angular forms, did not exceed $\frac{1}{1500}$ of an inch in long diameter.

Remarks.—The diagnosis, based upon the above condition, was that the growth belonged to the class of innocent new formations of connective tissue.

In several points the anatomy of this tumour presented a note-worthy similitude to that of cancerous tumours. As, for example, in the *abundance of free nuclei.* This fact is of the greater interest, as abundant free nuclei have been especially insisted upon as among the characteristics of malignant growths. In many innocent tumours, however, they occur quite as abundantly. This fact has not escaped the observation of some of the best of those pathologists who regard cancer as heterologous.

Thus Mr. Paget, in describing his class of "fibro-cellular tumours," which belong properly to the category of immature connective tissue, and of which he asserts (*Surg. Pathol.*, pp. 384) that their homology is "as perfect as that of the fatty tumours," says (*loc. cit.*, p. 383): "In many instances abundant nuclei appear among the filaments, or imbedded in the more homogeneous substance."

So also the same excellent observer describes and figures abundant free nuclei in his class of "recurring fibroid tumours," and the very name of what both he and Bennett call the "fibro-nucleated tumours," indicates a similar condition still more remarkable in degree. Both the "recurring fibroid" of Paget, and the "fibro-nucleated tumour" of Bennett, belong in fact to the same category of immature connective tissue, as indeed Mr. Paget himself has well indicated in the commencement of his 26th lecture, in which he says of these two classes, that "their component structures resemble those that are rudimental of the fibrous tissue."

Free nuclei will be described in connection with the anatomy of every case recorded in this paper, and their anatomical significance will be discussed in a subsequent paragraph.

The free nuclei in this case, as will be seen from the description, are quite like the free nuclei ordinarily observed in cancers, except in point of size, and in the size of the nucleolus. The nuclei of cancer are much larger than those above described, and have much larger nucleoli, a diversity which it will be perceived is essentially one of SIZE.

Another point in which similitude to cancer may be observed is in the *diversity of the degree of development*, to be noticed in the elementary forms. A diversity which, aided by the variation of shape, evidently produced in many of the cells by mutual pressure, begot almost as great a variety in the shape of the cells as is observable in cancer itself.

Notwithstanding these similitudes, however, this growth would never have been confounded with a fully developed cancer, from the cellular elements of which those above described would be distinguished by the smaller size, both of the cells and nuclei. Especially would those who look upon the cells of cancer as specific elements insist upon the smaller proportional size of the nuclei to the cells, and of the nucleoli to the nuclei. For myself, I am not disposed to insist too vehemently upon characters which are based essentially upon minute difference of size, but especially note the absence of anything like fatty degeneration in any part of the growth, which, taken in connection with the distinct vascular capsule, and the slow progress made by the growth in acquiring the small size it possessed, would appear to remove it from the category of cancer.

I may remark, in passing, that, besides its connection with the question of homology, this case possesses a certain degree of interest of its own.

In fact, small tumours, similar in all essential anatomical conditions to the above, are not unfrequently found beneath the skin in various parts of the body. The most interesting points in the history of the cases to which I refer, are the following: that these tumours, though slowly increasing in size, sometimes for a period of many years, seldom, when at the largest, exceed half an inch in diameter; that a number of them frequently occur at various points about the same individual, appearing sometimes simultaneously, but sometimes consecutively, the appearance of the first being followed by a considerable interval before others begin to grow; and, finally, the facts that, while some of them are perfectly painless, and not sensitive when pressed upon, others of the same structure are tender when handled, and some are the constant seat of considerable pain.

The latter cases belong to what has been designated as the class of painful subcutaneous tumours, a group of tumours which possess nothing in common but the painful sensations of which they are the seat. For myself, until I overlook the fact that tumours of *any* anatomy, and of *any* pathological significance, may be, in accordance with circumstances, which are not at present understood, either painful or painless, I shall be unable to see the propriety of dividing into separate categories tumours essentially the same in their anatomical structure, or of associating into a single category growths of unlike anatomy, merely on account of the presence or absence of *pain* as a symptom. The latter error has been committed in the case of the "painful subcutaneous tumours." For while, as Mr. Paget (*loc. cit.*, pp. 392) has correctly shown, most of the cases described under this head are examples of "fibro-cellular or fibrous tissue, in either a rudimental or a perfect state," that is, of more or less completely developed connective tissue, other cases, as Mr. Paget also mentions, which have been described under this head, are composed of fibro-cartilage, and belong, therefore, to the category of new formations of cartilage. But, while unable to see the propriety of erecting these tumours into a separate class, I am not inclined to

overlook the importance of drawing attention to the fact that *innocent* tumours, of small size, and various anatomy may be the seat of pains quite as severe as are ever seated in malignant growths. The following case is the history of a tumour which would doubtless be classified by most pathologists with the painful subcutaneous.

Case II. *Small Subcutaneous Tumour in the Shoulder of a Young Negro Woman.* Removed by Dr. C. S. Bishop, of Philadelphia. *History of the Case.*—This tumour was about the size of a small pea. It was firmly adherent to the skin, and seemed imbedded in it, but was not adherent to the subjacent tissues. It was the seat of exquisite paroxysmal pains. The patient was a young unmarried negro woman, nineteen years of age, in good health, and menstruating regularly. She had first noticed it a year previously. The tumour was removed by Dr. Bishop in March, 1859. The wound healed kindly. Two similar tumours appeared beneath the skin of the back about a month afterwards, at some distance from each other, and from the seat of the original tumour. They are at the present time still much smaller than the original tumour, and are not painful.

Anatomy of the growth.—This tumour was seated in the corium, and extended slightly into the subcutaneous adipose tissue. It was not abruptly defined from the sound skin on either side, and was not enveloped in any distinct cyst or capsule. When a section was made, the cut surface presented an opaque yellowish-white colour. No *creamy* juice exuded on scraping, but a colorless fluid was obtained, slightly turbid, from the presence of a number of minute fragments of tissue torn away by the instrument.

The following minute conditions were observed: Careful examination of the turbid fluid obtained by scraping exhibited the presence of granules, free nuclei, and cells, besides which, small fragments of well-developed white fibrous and yellow elastic tissue were observed.

The free nuclei were rounded, oval, or slightly irregular, with clear, pellucid contents, and one or two small-sized nucleoli. In their long diameter they varied from $\frac{1}{1600}$ to $\frac{1}{3000}$ of an inch, the average, perhaps, closely approximating $\frac{1}{2500}$ of an inch. These, though abundant, were not, however, quite as numerous as in the last case.

The cells were most of them oval, elongated, or spindle-shaped, and clearly transitional to fibres. But some of them presented shapes of such irregularity as legitimately suggested the idea of modification from mutual pressure. Such cells were more or less triangular or polygonal, and in outline were not unlike the most characteristic forms of well-developed cancers. Each of the cells contained a single rounded or oval nucleus, similar in all respects to the free nuclei above described.

The cell contents were dimly granular, but no minute oil drops were observed in any of them.

The long diameter of the cells varied greatly in accordance with their shape; the longest of the spindle-shaped elements attained a length of $\frac{1}{300}$ of an inch.

The irregular triangular or polygonal cells, above mentioned as analogous in shape to the elements commonly considered characteristic of cancer, ranged from $\frac{1}{1000}$ to $\frac{1}{2000}$ of an inch in diameter.

When thin sections of the growth were carefully studied, they showed that these embryonic elements lay in a firm fibrous stroma, in which, in

addition to white fibrous tissue, the action of acetic acid demonstrated the presence of abundant stout and curly yellow elastic fibres.

Remarks.—All that was said in the remarks on the last case with regard to the resemblance of some of the elements there described to the elements of cancer, applies here with redoubled force, inasmuch, in this case, many of the nuclei and cells had attained dimensions quite equal to the average of cancer elements. The same abundance of free nuclei was also observable, though in a less degree: and the same irregularity in the degree of development to which the cell forms had attained. Moreover, the likeness of the anatomical conditions to cancer is yet further increased by the absence of any distinct cyst or sac, limiting the growth from the surrounding parts.

Yet, nevertheless, I cannot regard this little tumour as a cancer. The general tendency of the forms of the majority of the elements, the absence of fatty degeneration in any part of a growth at least a year old, and the small size attained by the tumour in the time it had been growing, appeared to me, when taken together, to exclude all possibility of entertaining any such idea. I therefore regard it as belonging to the category of innocent new formations of connective tissue. The occurrence, subsequently to the operation, of two similar little growths in different parts of the skin of the same patient, does not appear to me to conflict with this view, since, as was remarked in connection with the last case, a number of little growths of this kind frequently occur at various points on the same patient, often making their appearance at different times. It will, of course, be understood that in such a case the removal, by local measures, of the first of a series of growths could in no way prevent the appearance of the others at a subsequent time.

I may also remark, before passing from this case, that it was carefully examined by me, with regard to any nervous connection which might account for the severe pain, of which it was the seat. I was unsuccessful in this search. Mr. Paget records a similar want of success on his own part in all but *one* of the "painful subcutaneous tumours" examined by him.

For myself, I am too well aware of the great practical difficulties attending the investigation of the distribution of the more minute terminal branches of the nerves, as, for example, in the papillæ of the skin, or of the tongue, to attach any great importance to such negative results as these. That no nerves should be observed, even by careful dissection under the microscope, only proves the absence of any trunk of nòteworthy size. It is only after the action of appropriate reagents, and the careful examinations of a series of thin sections, which should embrace the totality of the little tumour, that the absence of nervous filaments from the parts immediately connected with the growth could be established. Surely, all growths, whether painful or not, which are seated in a tissue, as thoroughly supplied

with nerves as the skin, must be brought into the closest relation with the nerves of the adjacent sound tissues.

Nevertheless, admitting a well-authenticated nervous communication to exist with every painful growth of this class, we shall be still unable completely to account for the pain, of which they are the seat, in view of the fact that the most distinct connection between a tumour and a nerve may exist, or a tumour may be evidently seated within the *sheath* of a nerve, and yet may never have caused the slightest pain.[1]

The causes of the pain, of which these tumours may be the seat, is then quite as unexplained as that of the pain accompanying any of the other varieties of disordered nutrition, and probably depends upon similar conditions. Indeed, it must be admitted, however reluctantly, that any form of disordered nutrition may, or may not, be accompanied by pain, and that we are quite unable to lay down any noteworthy condition as occurring in the one class of cases, which does not also occur in the other.

The two cases next to be described are tumours of greater size, both of which present so many points in common, that for the sake of brevity, after detailing the history of each case, the anatomy of the two may be described together.

Case III. *Tumour of the Back of a Man;* and Case IV. *One of the Back of the Neck of a Woman.* Both removed by Prof. H. H. Smith, at the Surgical clinic of the University of Pennsylvania.

History of Case III.—The patient in this case was a robust, healthy looking German, 37 years of age, and the tumour, which was exceedingly firm, about the size of a large walnut, and situated near the angle of the ninth rib, was not painful, and was quite movable beneath the skin. The skin covering it was healthy in appearance, and not adherent.

The patient attributed it to a blow received about a year previously. Subsequently the tumour was observed, and it has steadily increased in size.

This tumour was removed by Prof. Smith, Nov. 10th, 1858, and kindly handed to me for study.

The patient speedily recovered from the effects of the operation, and has not returned to the University since the wound cicatrized.

History of Case IV.—The patient in this case was a healthy young woman, 31 years of age. At the time when the tumour began to grow (a little over a year previously) she was single, but had since married. She did not remember any blow, or other injury, at the seat of the growth. The tumour was movable, but not freely so. It was occasionally painful. The skin covering it was healthy in appearance, and not adherent to it. Its density was greater than that of a fatty tumour, but less than that of the common fibrous tumour. Its size was about that of a hen's egg. Prof. Smith removed this growth May 25th, 1859. During the dissection, it was found to be firmly adherent to the tendon of the trapezius muscle. The wound healed kindly, and the patient has since remained well.

[1] See Paget, loc. cit., p. 395. "Tumors that are evidently within nerves are not always, nor even usually, painful."

Anatomy of these growths.—In each of the above cases the tumour was enveloped in a vascular sac or cyst of dense, well-developed connective tissue. In both, the texture was moderately firm, but not tough under the knife. The appearances presented on bisecting the growth with a scalpel, were somewhat different in the two cases. In Case III., the growth was composed of three distinct lobules, separated from each other by processes of the investing capsule. The section was yellowish and semi-transparent, and yielded, to pressure, an abundant albuminous liquid. The tumour in Case IV. was not lobulated; its colour was pearly gray, and its texture fibrous looking. Certain spots were more transparent and gelatinous in aspect than the rest of its substance. In both cases, scraping or teasing displayed the following minute elements. (No creamy-looking juice was present:)—

Free nuclei were moderately abundant. They were generally oval or rounded-oblong, with pellucid or dimly granular contents, and one or two quite large nucleoli. Their long diameter varied from $\frac{1}{2600}$ to $\frac{1}{1800}$ of an inch.

The cells, which invariably contained but one nucleus, were generally oval, or more or less spindle-shaped, and varied in length from $\frac{1}{1000}$ to $\frac{1}{260}$ of an inch. Of these, the substance of the longest was often distinctly fibrillated, as in the ordinary development of white fibrous bundles from cells. Besides these more usual forms, however, as in the elements of Case II., cells were observed more or less distorted, as if by mutual pressure. Some of these elements were quite remarkable, with nuclei from $\frac{1}{2500}$ to $\frac{1}{1500}$ of an inch in length, and the cells themselves often measuring $\frac{1}{1000}$ to $\frac{1}{700}$ of an inch in long diameter. Except in their less granular character, and the absence of evidences of fatty degeneration, the resemblance of these cells to certain of the so-called cancer-cells was quite remarkable.

Besides these, white fibrous bundles, and fibrils, were more or less abundantly detected.

The areolar plan of arrangement was demonstrated by thin sections.

Remarks.—The two tumours above described belong to Paget's class or group of "fibro cellular tumours." They are, in fact, like Cases I. and II., new formations of connective tissue, in which development is still in an embryonic stage. Both belong to the category of innocent growths. In fact, I should not have described them in this place, so well do they correspond with what Mr. Paget has ably described, were it not for the existence of the distorted elements above alluded to, the significance of which will be discussed in the sequel.

Distorted connective tissue elements are also to be met with sometimes in inflammatory exudations, as the following case illustrates:—

CASE V. *Chronic Inflammation of the Elbow-Joint.* Resected by Dr. D. H. AGNEW, at the Clinic of the Philada. Hospital, Blockley. *History of the Case.*—This patient was a coloured boy, thirteen years of age, and of apparently good constitution. He had injured the joint two years previously, shortly after which it became painful, inflamed, and finally an abscess formed, communicating with the joint, and discharging by several sinuses. At the time of the operation, the joint had become partially anchylosed, and the sinuses were still discharging. In the treatment of this condition, Dr. Agnew resected the elbow-joint early in March, 1859. A

full description of this case and of the operation, will be found reported by Dr. T. L. Taylor, of the Philadelphia Hospital, Blockley, in *The Medical and Surgical Reporter*, for April 2, 1859.

In this operation, the entire articulating extremity of the humerus, the ulna as far as the coronoid process, and the radius as far down as the tubercle, were removed, all being much diseased. The synovial membrane was much thickened, and a quantity of pus, and of a brain-like matter, was found in the cavity of the joint.

Through the kindness of Dr. Agnew, an opportunity was afforded me to study these parts.

The pus presented nothing peculiar.

The brain-like matter, pulpy, and of a pinkish cream colour, was not unlike the substance of some encephaloid cancers in its external appearances. Carefully studied, it presented the following elements :—

(*a.*) Fragments of connective tissue bundles, and of elastic fibres. These I judge not of new formation, but derived from the broken-down fibrous tissues about the joint.

(*b.*) Pus cells.

(*c.*) *Numerous free nuclei*, of considerable size, $\frac{1}{3500}$ to $\frac{1}{1430}$ of an inch. Of these, the largest sized were perhaps more abundant than the small. These nuclei were, generally, rounded or oval, but sometimes oblong and irregular. Their contents were clear or dimly granular, and they each contained one or two distinct nucleoli.

(*d.*) Many cells, of which some were variously spindle-shaped, and quite like the forms usually seen in developing connective tissue. But others distorted, being more or less triangular or polygonal. The latter measured from $\frac{1}{500}$ to $\frac{1}{800}$ of an inch in length, but were narrower than is usual with the typical cancer-cells. Their contents were granular, and each contained a single nucleus.

The nuclei within cells, it is worthy of note, were generally much smaller than the larger free nuclei—never exceeding $\frac{1}{3300}$ to $\frac{1}{2500}$ of an inch in diameter.

In the article referred to in *The Medical and Surgical Reporter*, will be found a wood cut, from a drawing furnished by me to Dr. Agnew, which fairly represents the above conditions.

Remarks.—The brain-like matter, whose morphological conditions have been just described, is evidently to be interpreted as organizing lymph, in which the local conditions have interfered with the developmental processes. A part at least of the exudation into this joint, attained but imperfect development. Arrested at that stage of evolution in which its cells were still spherical, its elements became pus cells, and it became pus. A part, however, of the developing forms in another part of the exudation have attained a higher stage, and while some have continued in the normal development path, a part have become variously distorted and deformed. In fact, these distorted elements present much analogy to cancer-cells, from which they differ chiefly in the smaller size of the nucleus.

Still stronger was the resemblance of the free nuclei to free nuclei found in cancers, in size, in shape, in appearance. I cannot believe that any microscopist would be justified in affirming from the study of these alone whether they were derived from cancer or not.

Critical remarks suggested by a review of the anatomy of these five cases.—It is not my purpose in the present article to enter into a full discussion as to the homologies of cancer. On the contrary, I shall limit myself almost exclusively to the elucidation of the two following propositions.

Proposition 1. No essential differences of structure exist between the so-called "cancer nuclei" and the so-called "fibro-plastic nuclei," between the typical forms of which every possible transition may be observed in different tumours, and sometimes in the same tumour.

Proposition 2. The same statement is correct with regard to the so-called "cancer cell," and the "fibro-plastic cell."

First with regard to the *nuclei.*

I do not pretend to assert that no difference of appearance can be discovered by the practiced anatomist, between the majority of the nuclei of a well-developed ordinary cancer, and those of an ordinary developing inflammatory exudation, or of the larger number of benignant new formations of connective tissue. Yet even here we should be misled, did we suppose that the diversity was otherwise than a difference of *degree* in characters possessed by both alike.

The characters upon which the advocates of special cancer nuclei have most relied are these.

(*a.*) *The greater size of the cancer nuclei.*—Thus it is generally stated that cancer nuclei are from $\frac{1}{2500}$ of an inch and upwards, while in innocent connective tissue formations the nuclei ("fibro-plastic nuclei") are from $\frac{1}{2500}$ of an inch and under; this magnitude, $\frac{1}{2500}$ of an inch, being the minimum for cancerous, and the maximum for fibro-plastic nuclei. Some little diversity as to the exact fraction exists, but all the statements approximate the above sufficiently closely.

(*b.*) *The difference in shape.*—The "fibro-plastic nuclei" are described as "oat shaped" or ellipsoidal; the "cancer nuclei" as ellipsoidal, oval, or spherical. Much confusion exists among different writers in the nomenclature by which these differences of shape are indicated, and there are few terms applied to nuclei of the one class which have not been bestowed by other authors upon those of the other. I may remark, however, that the diversity of shape which I have been able to make out between the typical cancer nuclei and the best marked nuclei of innocent connective tissue appears to consist essentially in the greater proportional *length* as compared with the *breadth* of the latter nuclei, while in cancer nuclei the breadth more nearly approximates to the length. Deformed nuclei, oblong, angular or irregular, I have met quite as often in innocent formations as in cancer.

(*c.*) *The greater size of the nucleoli* has also been insisted upon. "Its vesicular character" as contra-distinguished from the mere *dot* which constitutes the nucleolus of the nuclei of innocent growths, is an important diagnostic character. (Laurence, *Diag. Surg. Cancer*, p. 89, note.) Plural

nucleoli are generally admitted as occurring alike in "cancer" and "fibro-plastic nuclei."

The above characters are those which have been chiefly insisted upon, and were they constant they would be conclusive, not, perhaps, in distinguishing "cancer nuclei" as heterologous elements, but in diagnosing between them and "the fibro-plastic nuclei," and, indeed, great stress has been laid upon these characters by the heterologists. Thus, Mr. Paget (*Surg. Path.*, p. 497, Am. ed.) says: "The nuclei in hard cancers are more constant in their appearances than the cells, and I think even more characteristic. They are always comparatively large, having an average long diameter of about $\frac{1}{2500}$ of an inch, and varying from this size much less than the cells do from theirs. They are regular, oval, or nearly round, clear, well-defined, scarcely altered by commencing decomposition, or by water, or any moderately diluted test substance."

"Each nucleus has one, two, or rarely more nucleoli, which, like itself, are large in comparison with the ordinary proportion between nucleoli and cells, and are peculiarly bright and well defined."

Yet notwithstanding the confidence with which many still rest on the above descriptions, notwithstanding my own free admission that the characters above indicated as belonging to the "cancer nuclei" are correct for the larger number of the nuclei in the majority of cases of well developed cancers, and that the characters assigned to the "fibro-plastic nuclei" are correct for the majority of the nuclei of most benignant connective tissue formations, my observations compel me to express my belief that no characters as yet observed in the nuclei alone are absolutely distinctive. Two striking facts, as to which the tumours I have hitherto examined, speak equally plainly, prevent any belief in the specificity of the alleged diversities. First, free nuclei having all the characters above assigned to "cancer nuclei," may frequently be observed in growths, the total anatomy of which, as well as their clinical history will not permit them to be placed in the category of cancer; and, secondly, free nuclei having all the alleged characters of "fibro-plastic nuclei," are constantly encountered in growths whose general anatomy, as well as their clinical history, render their cancerous character only too positive.

The first of these facts is well illustrated by the minute anatomy of the little series of new formations described in this paper. Thus, for example, in Case V., we are not concerned with any tumour, but with a chronic inflammatory process; the general anatomy of the new formations, and the history of the case render it clear that the elements are those of ordinary developing inflammatory exudations, modified, perhaps, somewhat by the chronic character of the process; yet here we find free nuclei as large and distinct as are to be encountered in the great majority of well-pronounced cancers. Indeed, when I compare the carefully made drawings of these nuclei in my atlas, with the drawings of cancer nuclei which I possess, I am constrained

to admit that the largest of them present the so-called cancerous characteristics in as high a degree as the best marked of those I can find in most of my sketches. Thus, in respect to size, it will be observed that these nuclei are recorded as varying in different individual instances from $\frac{1}{3500}$ to $\frac{1}{1430}$ of an inch in long diameter, and it is remarked (*see* Case V.) that "of these, the larger sized were, perhaps, more abundant than the small," while, therefore, at the smaller end of the chain these nuclei are quite within the size assigned to "fibro-plastic nuclei," at the larger they have attained a bulk which is gigantic. I possess no drawings of free cancer nuclei which exceed these in bulk; on the contrary, while I have frequently encountered in cancers both free nuclei and nuclei contained in cells, fully equal in size, in other cases in which the cancerous nature of the disease was equally indisputable, the largest nuclei were of a far inferior bulk. Thus in an unpublished case of cancer of the stomach and pancreas of which I possess notes and drawings, the largest of the free nuclei did not exceed $\frac{1}{2500}$ of an inch, while the smallest measured was $\frac{1}{3300}$ of an inch in long diameter. Nor, if from size we turn to the consideration of shape shall we find the characters usually assigned to the cancer nuclei to be wanting; in shape "these nuclei were generally rounded or oval, but sometimes oblong and irregular." If we compare the transverse with the long diameter, we shall find that as in cancer, all grades exist between nuclei almost spherical, and those in which the long diameter is fully double the transverse. In appearance, these nuclei, like those of most cancers, were "clear or dimly granular, and they each contained one or two distinct nucleoli." As to the size of the nucleoli in these nuclei it is certainly not so great as the nucleoli I have sometimes seen in cancer, yet it was sufficiently noteworthy, $\frac{1}{15000}$ of an inch being, perhaps, the average size. These nucleoli, however, are exceeded in size by those of Cases III. and IV., some of which I measured as large as $\frac{1}{10000}$ of an inch. Frankly do I acknowledge that the nucleoli of cancer frequently attain a greater size, having measured them as large as $\frac{1}{8000}$ and even $\frac{1}{6000}$ of an inch; but at the same time in the majority of the cancers of the minute anatomy of which I have made drawings, the nucleoli do not exceed $\frac{1}{10000}$ of an inch. Often have I seen them in the free nuclei of undoubted cancers mere "dots" the $\frac{1}{20000}$ of an inch in diameter, like the nucleoli assigned to the typical "fibro-plastic nuclei." In almost every cancer may be met here and there a few free as well as cell-inclosed nuclei, in which it is difficult, if not impossible to recognize the existence of any nucleoli at all, and in one specimen which I examined almost immediately after its removal from the body, this character held good for the majority of the nuclei. These statements it would appear sufficiently justify the assertion above made, that free nuclei having all the characters usually assigned to "cancer nuclei, may be observed in non-cancerous growths of connective tissue. The converse assertion was that free nuclei, having all the alleged characters of "fibro-

plastic nuclei," are constantly encountered in growths undoubtedly cancerous. The existence of "fibro-plastic cells" (symmetrical elements of developing connective tissue) among the "cancer cells" (distorted elements of developing connective tissue) of cancerous growths has been recognized by several writers, and I have myself had repeated opportunities of observing the correctness of the notion. As, however, the characters of the "fibro-plastic cell" are based, among other points, upon the character of its nucleus, it legitimately results, that if "fibro-plastic cells" are to be observed frequently in cancer, "fibro-plastic nuclei" cell-inclosed, are also to be found. But besides these the statement is now to be made, that free nuclei, indistinguishable from these in all their characters except their freedom, are yet more abundant. Indeed, my own experience and drawings will sustain me if I state that the majority of cancers contain among their larger free nuclei many smaller than the $\frac{1}{2500}$ of an inch in diameter, and that of these smaller nuclei, a very large number could not be discriminated from the typical fibro-plastic by any anatomist who looked at their individual characters alone, rejecting the study of the other elements with which they are found associated.

These remarks will, it seems to me, pave the way for the reception of the first proposition; but if to these we add a thoughtful survey of the free nuclei observed in the five cases recorded, the truth of the proposition appears as firmly established as any general proposition can be upon so small a number of cases.

In every one of these five cases of non-cancerous formations abundant free nuclei were observed, in shape, in the number of nucleoli, and in the appearance of the contents, the nuclei in all the cases resembled each other closely; they differed, however, in size, and in the size of the nucleoli.

In Case I. the largest of the nuclei did not exceed $\frac{1}{3500}$ of an inch, and the nucleoli were "point" or "dot-like." In Case II. the nuclei were much larger, $\frac{1}{3000}$ to $\frac{1}{1600}$ of an inch in diameter, the nucleoli small-sized, but many of them no longer dot-like; the size of the majority of these nuclei is stated at $\frac{1}{2500}$ of an inch. In Cases III. and IV. the average size is still greater, though a few of the largest in Case II. exceed the largest here, the measurements are $\frac{1}{2500}$ to $\frac{1}{1800}$. In Case V. a still larger size is attained, $\frac{1}{1430}$ of an inch for a maximum. The large size of the nucleoli in Cases III., IV., and V., has already been commented upon.

When it is remembered that, as has been seen, the largest of these nuclei presented all the characters which have been assigned as peculiar to cancer nuclei, and that the analogues even of the smaller may be found in many acknowledged cancers, it will, I think, be admitted as having been shown that every possible transition form between "fibro-plastic nuclei" and "cancer nuclei" may exist in different tumours, or in the same tumour, and that consequently the two may be regarded as the extremes of a series which are divided by no abrupt boundary line.

MORE, it may, I think, be legitimately affirmed, upon the basis of the data afforded by this paper, that *there is nothing in the morphological study of the nuclei of cancer, which will justify the doctrine of heterology, or would suggest it to an unprejudiced mind.* And should the homology of cancerous growths with any normal structure, say with connective tissue, be rendered probable by a profound study of the structure and anatomical relations of cancerous growths, there is nothing in the anatomy of the nuclei, even of the most characteristic cancers, to militate with the dogma.

Before leaving the subject of free nuclei, however, I desire to say a few words on the significance of the fact of the great abundance of these elements, in both cancerous and non-cancerous growths.

Nuclei, which are found free in studying a growth with the microscope, may be interpreted either as elements in an undeveloped state, which have not yet acquired a cell-covering, or as having been formerly cell-inclosed, and set free either by the breaking down of the cell wall by natural causes, such as fatty degeneration, or by violence in the operation of scraping or teasing the preparation for the microscope. It is probable that in various cases the freedom of nuclei may be referred to all of these three categories.

I quite agree, however, with those pathologists who interpret the free nuclei as undeveloped elements in the vast majority of cases. Thus, though in a degenerating and broken-down cancer, it might be supposed that the abundant free nuclei observed were derived, to a considerable extent, from degenerate and broken-down cells, such a supposition would not be justifiable in a juicy young growth of great developmental energy, in which everything indicates progress, and nothing decay, especially if in such a case nuclei should be at a maximum, and cells at a minimum, or even wholly wanting, as in the "fibro-nucleated" tumour of Bennett. While the idea that the nuclei had been set free by mechanical violence, is incompatible with the fact that free nuclei are as rare in some pathological growths, rich in cells, as they are abundant in others, although both may have been subjected to similar modes of examination. Without entering into an argument on this subject, which has been well investigated by others, I would call attention to the statement made in connection with Case V., that the cell-inclosed nuclei observed in that case were generally much smaller than the larger free nuclei; measuring from $\frac{1}{3300}$ to $\frac{1}{2500}$ of an inch in diameter, while some of the free nuclei even attained the prodigious size of $\frac{1}{1430}$ of an inch. If we accept these huge overgrown nuclei as presenting undeveloped elements, nuclei which had not yet acquired a cell wall, it would appear that in view of the fact that they are so much larger than the ordinary cell-inclosed nuclei of developing connective tissue, we must admit that they have continued to grow after they had attained the stage at which a cell-wall should have been acquired, and so that *growth has proceeded although development has been arrested.*

So much for the nuclei, and the probability of their specificity.

Next with regard to the cells.

Proposition 2 affirms the same relation, above indicated, between "cancer nuclei" and "fibro-plastic nuclei" to hold good between "cancer cells" and "fibro-plastic cells;" for this proposition I claim no originality, yet think proper to contribute my mite of testimony towards the establishment of a doctrine elsewhere announced, but far from having obtained a deserved reception. Indeed, J. Z. Laurence, in his little work on *The Diagnosis of Surgical Cancer*, has distinctly announced the proposition much as I would do in this place, and has brought forward evidence in such a manner as to preclude the necessity of a lengthy discussion here. He affirms, and my own observations fully accord with the statement, "that there do exist cell-forms, which it is difficult or impossible to refer either to the cancerous or fibro-plastic type exclusively; and, as a corollary, that the existence of such forms brings us to the conclusion that the two forms of cell cannot but be regarded as the extreme links of a chain of forms connected by intermediate stages."

As in the case of the free nuclei, not only may every possible transition form between these two extremes be observed in different tumours, but also occasionally in the same tumour, and that in new formations of connective tissue, whose history demonstrates them to be non-cancerous, as well as in cancers. A careful consideration of the description of the cell-forms in the above series of cases, well illustrates this assertion. In every case, but especially in the first four, cells closely approximating, if not isomorphous, with the typical cells of cancer were observed. These "cancer-cell" imitating elements fully equalled in bulk the supposed heterologous cells, which they resembled. Thus, while in Case I. "the largest of the rounded, oval, or angular forms did not exceed $\frac{1}{1500}$ of an inch in long diameter, in Case II. the largest of the similar elements attained the size of $\frac{1}{1000}$ of an inch; and in Cases III. and IV. from $\frac{1}{1000}$ to $\frac{1}{700}$ of an inch. In Case V. a still greater length was obtained by some irregularly triangular cells, but I shall not insist upon these cells, on account of their greater narrowness, and the smallness of their nuclei, as compared with the great length of the cell. It is true that none of the cells here described had more than one nucleus, but cells with plural nuclei are so far from being pathognomonic of cancer that they are often absent throughout acknowledged cancers of considerable bulk.

It is also true that in no part of the four tumours described were any cells observed containing any great number of those minute albumen-coated oil drops, which are the evidence in cancer of fatty degeneration. But this fact, whatever its value in a diagnostic point of view, can have no weight in the study of the question of homology, for fatty degeneration is a process which may occur in most normal and pathological tissues, and its presence, therefore, can never be available in attempting to establish the heterologous character of the elements in which it occurs.

Besides, in the best marked cancers, except in such parts of them as are beginning to soften, many individual cells occur in which no evidence of fatty metamorphosis can be found.

It appears, therefore, to me from these considerations that if, as is generally acknowledged, fibro-plastic nuclei and cells be homologous with the embryonic elements of connective tissue, be in fact pathological "young connective-tissue" elements, *there is every reason to regard the typical elements of ordinary cancer as deformed young connective-tissue elements;* and this relationship suggests a question of great practical importance, which may be thus expressed: May a growth, whose anatomy is that of symmetrically developing connective tissue, subsequently assume the cancerous character; or is the distortion and malformation characteristic of the elements of cancer impressed upon them from the earliest period of their existence? For myself, my own observations have hitherto quite agreed with those of Paget, who has found (p. 515 *loc. cit.*) the cancerous anatomy stamped upon the growth at the earliest period at which he has examined them. Yet, when I find, as has occasionally been recorded upon reliable authority, the extirpation of so-called fibro-plastic tumours, that is, of new formations of connective tissue, supposed to be symmetrical, followed by a return in the cicatrix, or elsewhere, of consecutive growths, having all the anatomy of cancer, I cannot overlook the possibility indicated by the question.

Another problem, which may appropriately be mentioned in this connection, is the possibility of a growth running the clinical history of cancer, although the anatomy, both of the primary and consecutive growths, may not be that of cancer, but of symmetrically developing connective tissue ("malignant fibro-plastic tumours"), of cartilage ("malignant enchondroma"), of bone ("malignant osteoid"), or of epithelial structures ("epithelial cancer").

The cases recorded by respectable observers, in which such a train of events has been alleged to occur, are comparatively rare, except for "epithelial cancer." Yet, in Paris, Velpeau has believed himself to have encountered a sufficient number of such cases to lead him to include epitheliomata, fibro-plastic growths, and enchondromata, under the common designation of cancer, and totally to reject the aid of minute anatomy in the diagnosis of tumours; while in Edinburgh, Bennet, in view of a similar class of cases, though he continues to adhere to minute anatomy, as a means of classifying new formations, asserts, that malignancy is an attribute of no particular class of tumours, but that growths of almost any anatomy may run the course hitherto predicated of cancer only, though those of a certain structure are *more* liable to do so than others, and conversely, that growths of any anatomy may prove ultimately benignant, though some are less liable to do so than others. I shall make no attempt in the present place to enter upon the discussion of this important problem,

upon which, however, I trust, at a future time, to be able to bestow some attention; but I cannot but observe that the malignancy of an enchondroma, or of any other growth, the homology of which is beyond dispute, would at once overturn the assumptions of those who suppose that heterology of structure is necessary to account for the malignancy of cancer.

Art. II.—*Account of an Epidemic Fever which Prevailed at Somers and Yorktown, Westchester County, N. Y., during the Months of February, March, April, May, and June*, 1859. By Charles A. Lee, M. D., of Peekskill, N. Y.

As the contagiousness of typhoid fever is not yet generally admitted, any facts bearing on this point possess a degree of interest sufficient to entitle them to be laid before the profession. It is very obvious that observations relating to the contagiousness of this disease can be most advantageously made amongst the scattered population and in the small villages of the country. It was under such circumstances that the following cases were observed. No one can doubt, on reading the history of these cases, that the disease was typhoid fever, in a majority of cases of a mild type, in others of a very malignant form. In all, some fifty cases have occurred during the last three months, scattered over a thinly peopled district of several miles in extent. Of this number, but two proved fatal. All the cases could be traced to one single source, a sporadic case, originating under circumstances likely to give rise to idio-miasmatic infection. The disease originated in Yorktown, but a majority of the cases occurred in the adjoining town of Somers, Westchester County, N. Y., all, however, traceable to the original case.

Case I. The first case which occurred, and to which reference has been made, was under the medical charge of Dr. Curry, a highly respectable practitioner of Yorktown, to whom I am indebted for the following history of it, as well as several other cases which follow:—

"Fred. S., a stout, healthy young man, aged 24; habits good; intellectual capacity good; weight, 160 pounds; had received a violent shock from falling from a wagon two months before; was comatose for forty-eight hours from the concussion, the head receiving the whole force of the fall; recovered in a week entirely; went to work, and was much exposed through the whole month of December; suffered greatly with cold, having a job that required continual attention; ate cold dinners, otherwise lived well; drank a moderate quantity of spirits; immediately after the extreme cold weather, was attacked with diarrhœa, which prevented his working; remained at home, and sent to me for medicine; kept sending for three weeks, until I became wearied, and told his friends that I must see him; I did so; found him about the house and yard; his appearance was start-

ling; his face was pinched, pale, and cadaverous, his eyes sunken and sleepy; he was deaf; skin hot and burning; pulse 120; constant but moderate subsultus; perfect coherency; tongue red, dry, and nearly clean; much thirst; abdomen moderately tense, but extremely tender; bowels moving every hour; black, foul discharges, moderately copious, and tinged with blood; appetite much impaired, but not gone.

"I pronounced it a case of typhoid fever, urged the patient to bed, applied a blister to abdomen with great relief, gave calomel and opium in large doses, kept poultice to bowels for two weeks, gave Port wine, beef-tea, brandy, and quinine. At the end of forty days from the time of the attack, he began to convalesce, and at the end of sixty days was well."

"From this case," says Dr. C., "arising in the manner described, there have shot off, in perfectly straight lines, thirty others, bearing each idiosyncratic symptoms, but of the same general type. The residence of the young man, whose case I have referred to, stands upon the highest hill in Yorktown, two story, no basement, rooms small, no ventilation in the apartments occupied by him, except from the south, family large, two or three sleeping in a bed, no squalor, no fastidious neatness."

Case II. "During the progress of the case," says Dr. C., "his brother, a very strong man, weighing 190 pounds, 25 years old, just recovered from a venereal disease, was attacked with rigors, headache, furred tongue; and, at the end of a week, in spite of cathartics, emetics, and sweatings, was a confirmed case of typhoid; bowels tympanitic, dejections frequent and offensive, slight sordes, delirium sometimes mild, at others furious, eyes red, countenance congested, as also slightly the lungs, pulse 90, and intermittent. It was a hard case; the treatment was severe, and he began to convalesce in twenty-one days; was well in thirty-five."

Case III. "Simultaneously with this last, and in another room, his sister, aged 17, large and healthy, was attacked in the same manner; the same general symptoms were present, but much milder. Through the expectant mode of treatment, she recovered, without much suffering, after the third week."

Cases IV. and V. "These cases," continues Dr. C., "were in the lower story; but the contagion went up stairs, laying prostrate a married lady in the seventh month of pregnancy, and her daughter, aged 9. Both were severe cases, and recovered only after three or four weeks of strong treatment. At this period, however, the seeds of the disease were producing fruit among those neighbours who had been most attentive to this suffering household."

Case VI. "About the 1st of February, I was called to see P. H., residing in Putnam County, about two miles from the family before spoken of. He was a strong man, 26 years of age, a journeyman carpenter, and fellow-workman with the first-described patient, and had nursed and watched over him for many days, until he became himself sick. When I first saw him, he was suffering under the usual premonitory symptoms, much headache, sickness at the stomach, loss of appetite, slightly furred tongue, and chilliness; pulse 75. I gave him quinine at once after opening the bowels; but I do not propose to give the details of the treatment. The case went

on for three weeks; the patient was delirious most of the time; he became blind and deaf; the bowels were slow, but all the time moderately tender and tense. At this time, sweating began, and with it hemorrhage from the bowels, not by quarts, but by gallons. He sank till every hope was gone. Brandy, opium, and tannin were used in immense doses with slight relief, when I began the use of sugar of lead in ten grain doses every time the bowels moved. The third exhibition of this medicine stopped the flow four days, when two teaspoonfuls of castor oil produced a moderate dejection from the bowels, the most healthy consistence of all. By continual bracing, the patient recovered at the end of about fifty days from the attack."

Case VII. "While this patient was under treatment, another came under my charge, four miles to the westward, a very infirm lady, aged 66, but as decrepit as many at the age of 86. She was the mother of one of the former patients, had been much in the sick-room with her, and had washed the clothing from her person and bed. Headache and gastritis were the ruling symptoms. Her tongue was stiff for six weeks, so hard and cracked that she was entirely unable to protrude it; and a cloth wet with ice water was kept upon it by night and by day. She was for a long time nearly comatose, always thirsty, suffered much with singultus, would always take food, though always driven to it, became so emaciated and helpless that bed-sores were formed, had distinct petechiæ, seemed frequently dying from inanition, but finally rallied, and began to sit up at the end of eight weeks. The expectant mode of treatment alone saved her."

Thus far we are indebted to the notes of Dr. Curry for the history of this epidemic. Going back, however, to the month of February (the disease seems to have commenced in January, 1859), we have the history of the following case, from the pen of my friend, Dr. James Fountain, of Jefferson Valley, the attending physician. It should be stated, both in justice to Dr. Curry and Dr. Fountain, that their notes were not prepared with a view to publication.

Case IX. "The fever, of which the following is a short narrative, seems to have been generated in my neighbourhood in a family, in a situation calculated to engender idio-miasmatic agents. It was an idio-miasmatic fever. On the 14th February, I visited a Mr. Tompkins, living within a short distance of the family referred to (Case 1), who had been sick of a typhoid fever. He had visited the family often, and had been for four or five days chilly and feverish, with flushed face and distress in his head, but no severe pain in it. He was moderately thirsty; had some appetite; pulse 100, soft and small; tongue had only a thin, white scurf, confined mostly to the back part of the two lateral halves, diminishing towards the centre and edges; sides and apex clean, and the whole moist. He had a strong predisposition by parentage to insanity, and, in fact, he was always in a peculiar state of mind, apart from a due balance, with an evident unsound look of countenance. His mother was of the same caste, and often quite insane, and his uncle and grandfather, by her side, were insane over forty years previous to their death. I prescribed a cathartic of calomel, followed by salts and senna. I left him a dose of calomel and Dover's powder, to be taken at bedtime, to be followed by castor oil next morning. I saw him the next day, about 3 o'clock P. M., and found him much worse,

evidently from the opium in the powder, for his face was suffused with blood, and his head pained him violently; pulse 115. I immediately commenced the free use of tartrate of antimony and potassa, with ice to the head. He was soon nauseated, and, in about two and one-half hours, he vomited. On the next morning all was quiet; pulse 100; tongue the same; headache gone and never returned, but he uniformly complained of a peculiar distress in his head, differing entirely, he said, from headache. I will here discontinue the details of the case as too tedious for the occasion, and only notice the peculiarities he had for nearly two months. His bowels became irritable from the use of calomel and tartrate of antimony, occasionally employed, and his mouth became very aphthous. Ipecac. and nit. argenti ultimately removed this condition. On the third day, the mind began to wander, and this aberration continued throughout, and, towards the close of his life, he was often raving, and would be up and dressed frequently. During his whole sickness he had very little thirst, and no pain, no foul tongue; it soon cleaned off, was red, smooth, dry, or shining; no sordes about the teeth; no offensive breath, nor offensive odor from his breath, or person, or bed. It was, throughout, a clean sickness. The fever was so confined to the brain and nervous system, that I viewed it more in the light of a cerebral perturbation than a general fever. Finally, after various appearances of convalescence, effusion took place in the brain, and he died comatose. Witnessing the bad effect of opium given in my Dover's powder on the start, and viewing it mostly as a brain affection, I prescribed no opiate until towards the close. I then had recourse to it only to calm his ravings, which it did, and rendered the closing scene quite comfortable."

Cases X., XI., XII., and XIII. "A few days after his decease, his two sons, aged 13 and 15, were attacked in the same gradual manner, but the brain in both was less affected. They remained sick two weeks, and then a younger son was attacked with chills, fever, and violent delirium. A full dose of tartrate of antimony and a calomel cathartic arrested this case at once, and cut it off in twenty-four hours. Soon after this, the daughter, aged 16, who had for three weeks shown symptoms of the disease, took her bed. She remained sick about ten days, and then convalesced. In all these children's cases the bowels were sluggish throughout, and remained so during convalescence. In all there were morning remissions and evening exacerbations. Distress, not pain in the head, a thin, white scurf on the tongue, moderate or no thirst, mental wanderings, no sordes around the teeth, no fetid breath, nor offensive odor from the body, no stupor. In fact, in these cases the fever seemed to spend its whole force on the brain and nervous system. Hence it may fairly be called a nervous fever. The most effectual remedial agent I used was a solution of tartrate of antimony, given during the exacerbations in fully nauseating doses. Its specific effect operated like a charm in removing the flush of the face, and in producing calm sleep. I found, on fair trial, that quinine, given during the remissions, aggravated the exacerbations, and did very great injury, although the remissions were accompanied with profuse perspiration. I found the disease of a mild type, and free from danger in well-balanced constitutions, but persistent in its career and true to itself."

These cases will serve to give a pretty accurate idea of the character of the disease.

The first case to which I was called (20th April), was that of W. S. Tompkins, a brother of Thomas T., whose case is above described by Dr. Fountain, aged 35, farmer, good constitution, and very temperate habits. He had been considerably exposed to the disease, having watched several nights with his brother, the latest about three weeks before he was taken down. Previous to this, however, he had been troubled with bilious derangement, a thickly furred tongue, headache, vitiated taste, loss of appetite, &c. He kept about, though feeling very unwell for two or three weeks previously, until about the 15th of April he took to his bed. He had been under the charge of Dr. Fountain from the time of his attack; who had administered several cathartics of calomel and salts, an emetic, and antimonial solution, besides applying one blister to the chest, and another over the back. I found him laboring under excessive nervous irritability; mind wandering; tongue moist, and but slightly coated with a white fur; skin warm, and bathed in a warm perspiration; great irritability of stomach; pulse 90, and soft; respirations 34; face flushed, with evident determination of blood to the head. He had constantly complained of great distress and pain in the back of the head. The discharges from the bowels were very copious, of a highly bilious character, and very offensive. The prostration was very great, syncope being induced by sitting up in bed. Wakefulness was a prominent symptom. The mind was incoherent for the most part, answering questions, however, intelligently; occasional tympanitis, pain, and gurgling in the bowels; the pulse ranged from 90 to 100 throughout the disease. The fever ran about twenty-one days, when convalescence began, and went on rapidly. The treatment was mildly expectant. Suitable nourishment, as beef and chicken-tea, barley and rice-water, arrowroot and corn-starch, were the chief remedies. The only medicines employed were acet. ammonia; spt. nit. ether; comp. tinct. opii; Dover's powder; ol. ricini; hydrarg. cum creta; and fluid ext. senna and rhei. Good wine and brandy were regularly but sparingly given; the other remedies from time to time, as circumstances required.

Up to the present time, June 16th, 1859, I have attended, since April 20th, ten cases of typhoid fever, varying in severity and duration from those in which the patient was scarcely obliged to take to the bed, to those attended with extreme prostration and malignancy. From these cases, though few in number, the following particulars may be gathered.

Symptoms of the Access.—These were either *cephalalgia*, or a peculiar sensation of distress in the head, not amounting to actual pain, more frequently in the posterior and basilar portions; a rumbling sensation, and ringing or buzzing in the ears; stiffness and pain in the neck and jaws; difficulty of swallowing; *anorexia, loss of appetite, and not unfrequently nausea* (in some cases the appetite continued quite good up to the day when the patient was obliged to take the bed); *chilly sensations*, or a distinct *chill*, varying in duration and severity in different cases; *pain in the limbs or loins; lassitude; bronchial irritation and cough*, with *soreness or pain in the chest; in one or two cases diarrhœa; in a few costiveness;* but in many the bowels were natural. The duration of the prodromic or forming stage varied greatly, from one day to four weeks, or even longer, if the patient could be believed. Usually, the stage of incuba-

tion, after exposure, lasted from one to two weeks. Several kept about for several days after the fever had fairly set in, but, in most cases, they took to the bed immediately. A few went through the disease without taking to the bed at all, except for an hour or two through the day, and then with their clothes on.

Causation.—With the exception of the first case, which, we have seen, originated from exposure to extreme cold, fatigue, and, perhaps, unsuitable food, all the others, it is believed, can be traced to contagion. In a few cases, the patients had been a good deal worn down by watching, fatigue, and anxiety, but others who watched but a single night were also attacked, and, in one case, soon after washing the clothes of a fever patient. The severity of the disease in every instance, when not aggravated by treatment, seemed to be in a good measure proportionate to the degree of exposure in the sick-room. Those but slightly exposed were but slightly affected, and *vice versa*. At first, it was not believed to be a contagious fever, and very few precautions, by way of ventilation, &c., were used to guard against it; as it progressed, however, so strongly marked did this feature become, that it was difficult to obtain watchers and nurses for the sick. Of the physicians who watched its progress, none doubted its contagiousness, after the first few cases. More males than females were attacked by it; but this may have been owing to the fact that the first person seized was a male, and had men watchers; they, on being attacked, had also watchers of the same sex, and so on. Five adult females, in families where the male head was attacked, became subjects of the disease, and some ten or twelve children of both sexes, under the same circumstances; most of these cases being comparatively mild.

All the cases which have occurred since the first case, fifty odd in number, may be distinctly traced to personal infection; and no sporadic case, since the first, has occurred, where the individual has not been thus exposed. Of 14 persons who watched with Wm. S. Tompkins, brother of the patient who first sickened, 7 took the disease. Where great attention was paid to changing frequently the bed and body linen, cleansing the patient's body and limbs daily, and free ventilation, no other member of the family, nor any who watched with the sick, were subsequently attacked;[1] but where these were neglected, nearly every inmate was seized, and about half who stayed for any length of time in the sick-room. The observed facts go to sustain the conclusions of M. Gendron, viz., that typhoid fever propagates itself very slowly by contagion; that the interval between the successive

[1] An exception to this has occurred since the above was written. A Mr. C. went safely through the disease—the fever running about twenty days—and though the greatest attention was paid to ventilation and cleanliness, the bed and body linen being changed daily, the wife and daughter, who had nursed the patient throughout, took the disease, from which they have not yet entirely recovered (August 1, 1859).

cases may vary from three weeks to a month, so that the fever may be several months spreading through a village or neighbourhood; that the period of incubation rarely exceeds eight or ten days, though it may extend to fifteen or more, and occasionally be as short as twenty-four hours. I have good reason, however, to doubt the correctness of his conclusion that the power of transmission, or communication, does not exist in the early period of the disease, and is rarely active before the sixteenth day.

Symptoms referable to the General Aspect; Expression of Countenance, &c.—As a general rule, there was more or less dulness or listlessness of expression, with a peculiar lack-lustre of the eye. The complexion, in cases of much severity, was considerably altered, sometimes of a dusky hue, at others, reddened, or slightly livid. The capillary vessels of the cheeks, especially, were much congested; occasionally the congestion extended to the chest and other parts of the body. The redness disappeared on pressure with the finger, returning with greater celerity in proportion to the brightness of the colour, and less quickly in proportion to its duskiness or lividity, a fact, first particularly noticed in this disease by Dr. Flint, showing, as he inferred, that the colour is an indication of the degree in which the forces of the circulation residing in the capillary system are depressed. It has been suggested that this capillary congestion of the face and surface generally is dependent on the complication of pulmonary disease, but no such connection was observed in the cases which came under my observation. Indeed, the deepest suffusion was observed in some instances where there was no pulmonary complication at all, and, on the other hand, in some cases where there was considerable pulmonary congestion, there was no change in the colour of the countenance observed, nor was there any special connection noticed between the degree of capillary congestion and the state of the pulse, as to force and frequency. Whether such appearances of the surfaces, like petechiæ, may not rather be dependent on the state of the blood than the forces of the general circulation, remains to be determined by future observations. In one severe case, *great tremulousness of the muscles of the face* was strongly marked; some lost their natural expression of features; in a majority, especially of the severer cases, the *expression was heavy, dull, stupid, or vacant*, while in some, it was nearly natural throughout. Most of the patients lay on the back, and, in the worst cases, the tendency to slide downward in bed was noticed. Other positions were assumed where the disease was mild, or its severity abated.

Symptoms referable to the Nervous System.—These were generally strongly marked, and, in severe cases, always present, varying, however, in kind, as well as degree. In three or four cases, delirium may be said to have been *active;* in some, *passive.* In mild cases, it was wholly absent. In one case, the patient attempted to stab himself with a penknife, and required close watching. In general, it manifested itself by incoherent speech, loss of memory, partial abolition of hearing, and in one of sight. Some com-

plained of a peculiar and indescribable feeling in the head, rumbling or ringing in the ears, and perversion or loss of the natural taste. The latter was observed in every case, except the very mildest. The patient would often insist on getting out of bed, and dressing himself, even when unable to stand, often asking irrelevant questions, and showing total unconsciousness as to his real condition. In several instances, the patient could not be induced to take the bed until the physical strength was so far exhausted that he was no longer able to sit up. There was no persistent delusion in any case, but a constant succession of vagaries and whimsical notions. No fear of death was manifested in a single instance. In every case, the patient gave replies to questions, but would immediately relapse into a dreamy or half-conscious state. The feebleness of the intellectual operations seemed to bear a direct proportion to that of the physical powers. The memory was particularly deficient; and, on recovery, they could very imperfectly recall any of the circumstances that had transpired. *Opiates* did not seem in my own practice, to increase the cerebral disturbance. For the most part, they had a contrary effect. In the only fatal case I attended, a man above 60, who died from peritonitis from perforation of the intestines, there was no delirium nor mental aberration whatever. His intellect remained clear up to the very moment of death. The case, however, was regarded as a mild one up to the time when perforation suddenly took place. In addition to the sluggishness of the mental powers, and absence of anxiety as to the result, no emotional sensibility was manifested, either pleasurable or otherwise. *Somnolency* was present in most of the cases, *vigilance* in several; while *coma* was present in only a single instance of the cases under my charge.

Senses and Sensibility.—In most of the cases, there was a peculiar feeling of distress or actual *pain in the head;* in two, cephalalgia was very severe. In a majority of cases, it was moderate; but, in general, it was more commonly observed during the *access* than after the disease was fully formed. *Pain in the limbs* was of frequent occurrence, seemingly of a rheumatic or neuralgic character. Sometimes it was seated in the loins, chest, or back, especially the back of the neck; but in no case was it of long continuance. In most cases, there was *diminished general sensibility.* No particular morbid changes were observed in the *eye,* except the dulness already noticed. *Deafness,* or at least *dulness of hearing,* was frequently present. In a few cases, there was increased susceptibility to sound. No perversion of the sense of *smell* was observed; though that of *taste* was almost uniformly affected. *Involuntary muscular contractions* were only observed in two instances, both of which recovered. *Picking the bedclothes* was noted in one case.

Prostration.—This was not extreme in any case. The patients could generally raise themselves in bed, or be assisted to a chair, and remain seated or semi-recumbent while the bed was being made. They usually

were assisted out of bed to pass their evacuations; though in four cases a bed-pan had to be used, syncope being induced by the erect posture. In a few cases, patients, as already noticed, passed through the disease without taking to the bed, except reclining occasionally.

Symptoms referable to the Digestive System.—The *appetite* was usually wanting during the accessory period, but not invariably. There was a general loathing or dislike of animal food and broths, as beef-tea, chicken-tea, &c.; and considerable urging was necessary to induce the patients to swallow them. *Thirst* was not strongly marked, except in two or three cases; in a majority, the patients seldom asked for drink, but took it freely when offered. It may be that the frequent absence of this sensation is owing, as Dr. Flint has suggested, to bluntness of perception, or mental apathy, as the morbid conditions which occasion thirst are present. The *tongue* was generally moist, and covered with a thin white coat; in many, it presented nearly a healthy appearance; in one, the teeth, lips, &c. were covered with black sordes. A dry state of the tongue, which I have usually met with in a majority of cases of typhoid fever, was rarely observed in this epidemic. Dr. Flint noticed dryness of the tongue in thirty-six out of fifty cases, and attributes it not merely to a diminution of the secretions from the salivary glands and mucous follicles, but also to the apathy of the patient as respects painful sensations. The patient, experiencing little or no discomfort from the dryness and hardness of the tongue, does not move the organ sufficiently to diffuse the scanty salivary secretion over its surface, the tongue, moreover, remaining motionless from participating in the inertia of the muscular system, aided also by the somnolency which is present,[1] in consequence of which he respires chiefly through the mouth. If this explanation be correct, and it seems highly plausible, then we may infer that there was less mental apathy and somnolence in this epidemic than in the hospital cases recorded by this author. In one case only was the tongue *reddened, glazed,* and *fissured.* In this case, it was so stiff that the patient could not thrust it from the mouth. The patient died from peritonitis, consequent on perforation. This state of the tongue had existed about one week previous to his death. *Tremulousness of the tongue* was observed in a few instances; but this, as well as the appearances of the tongue, were of no great use in forming a prognosis. The same remark will apply to the *difficulty of protruding the tongue,* which would seem to be rather connected with the state of the mind, or voluntary power, than to diminished muscular force. *Nausea and vomiting* rarely occurred, unless caused by medicine. The *alvine discharges* were usually of a healthy character, if the bowels were not disturbed by medicine. In several cases, however, they were of a highly bilious character; in a few, *mucus* abounded in the evacuations. Diarrhœa was not unfrequent when

[1] Clinical Reports on Continued Fever, &c., p. 64.

indigestible food or improper drinks were taken. In one case, severe diarrhœa was brought on by drinking cider and buttermilk. The bowels were in many cases easily disturbed. There was an irritable condition of the gastro-intestinal mucous membrane, which rendered the use of antimony and other irritant medications very hazardous. When spontaneous diarrhœa occurred, however, it was generally easily controlled. *Costiveness* was present in three cases. *Hemorrhage* from the bowels occurred in two cases; and in both it was profuse. *Tympanitis* was present in three cases; *abdominal tenderness* was extreme in the fatal case; in six others, it was present, but moderate in degree. It was mostly confined to the right iliac region. *Gurgling* was present in four cases, and was usually associated with tenderness on pressure, and tympanitis.

Cutaneous Eruptions.—These were present in a majority of cases, of a rose red colour, and oval in shape, and confined, so far as observed, to the chest and abdomen. *Petechial eruption* was noticed in two cases, scattered over the whole body. *Sudamina* were not noticed in any case.

Symptoms referable to the Respiratory Apparatus.—Bronchial irritation and pulmonary congestion were marked symptoms in a majority of the cases of this epidemic. In some slight, in others so severe as to complicate the case very seriously. In one case it occurred in connection with pneumonitis. In three cases cough was one of the earliest symptoms. In one case the congestion was so great and the cough so urgent, as apparently to threaten suffocation. In a few there was no cough and no pulmonary symptoms. Expectoration was generally difficult, owing to the thickness and adhesiveness of the sputa. In two cases there was congestion of the mucous membrane of the mouth and fauces, as well as the bronchi.

There was *pain in the chest* in two or three cases, and it was always associated with cough. *Aberrations of respiration* were not unfrequent, varying in number from eight to forty per minute. In one case there was *stertor;* in three *sighing respiration;* in two *fainting* on slight exertion or mental excitement. In a majority of cases the breathing was either moderately quickened, or nearly natural. In the case where the respirations were most frequent, the patient was a very nervous, irritable subject, and labored under considerable pulmonary congestion. This patient recovered slowly. Most of anomalies connected with the function of respiration seemed dependent on a disordered or morbid state of the nervous centres, and were more strongly marked in proportion as the latter was manifested. *Epistaxis* was present in only one instance, and in this the sputa were tinged with blood. As there was considerable fulness of the cerebral vessels, headache, cough, &c., it was attended with great relief to all the symptoms, and the bleeding was accordingly promoted by applying leeches to the internal surface of the nostrils. *Singultus* was observed in only one case, and that terminated fatally. It was a frequent symptom from almost the very commencement of the case. It was the case in which the tongue

was stiff, glazed, red, dry, and fissured, and which terminated in peritonitis, from perforation of the intestine. It was not associated with involuntary contractions of any of the voluntary muscles.

Symptoms referable to the Circulation.—With regard to the pulse, it may be said to have ranged from natural up to 130 in a minute. In no instance was it observed to be less frequent than in health. In one case, an adult, it ranged from 80 to 90 throughout the disease. In the fatal case it was usually about 100 up to the time when perforation of the intestine was supposed to have taken place, when it immediately rose to 120, and continued very frequent till death took place. On the second day after, as in a majority of cases, there was an evident exacerbation towards evening: the pulse increased in frequency accordingly. The frequency of the pulse, however, was not observed to bear any direct relation to the severity of the disease. In one of the severest cases it was tolerably full, soft, and but 90 in the minute. In one instance it was 120 for two or three days before the patient took to her bed. In children the frequency was relatively much greater than in adults. Generally, the pulse was small and feeble. Hardness of pulse was strongly marked during convalescence, and increased hardness indicated not only a favorable termination, but speedy convalescence. *Capillary congestion*, especially of the face, was generally present in the earlier stages of the disease. It bore no particular relation to the state of the general circulation, and was wholly independent of the state of the pulse. In some few cases it did not exist in any marked degree. Where it existed in any considerable degree, there was a corresponding amount of pulmonary congestion. May we not safely conclude that it is a phenomenon, solely dependent on the state of innervation?

Symptoms referable to Skin.—We refer here to its condition as to heat, dryness, moisture, &c., independent of the characteristic eruptions to which reference has already been made. In about one-half of the cases the skin remained moist throughout the whole course of the disease. In two cases sweating was profuse, and attended with a strong characteristic odor. In three cases the skin continued for the most part dry, although warm and mildly stimulating herb-teas would induce perspiration. In two or three cases the sweat was partial. In no instance was perspiration observed to exert any favorable effect on the progress of the disease, nor was it observed to prove critical in a single instance. Diaphoretics, also, had no particular influence in moderating or controlling its career. Though but little is known as to the antecedent conditions or causes on which sweating in fever depends, it seems very probable that, like capillary congestion, it is intimately connected with the state of the innervation, or condition of the nervous centres. In the fatal case already noticed, the skin remained uniformly harsh and dry, until symptoms of perforation took place, when the patient became suddenly bathed in a cold perspiration, which continued till death. On the whole, however, the state of the skin seems to have but slight patho-

logical significance in this disease. The *heat* of the skin was pretty uniformly above the natural standard, whether dry or moist. In no instance was it observed below the natural temperature, unless of the extremities. *Pungent heat* (calor mordicans) was not noticed in any case.

The *symptoms referable to the genito-urinary system* were not very characteristic or important. The urine may be said to have been uniformly scanty, generally high-coloured, and, near the crisis, loaded with lithates. In the fatal case there was, towards the close of the disease, a frequent desire to void urine without the ability. In one or two cases of adults, the urine was passed involuntarily. In children this frequently occurred.

As to the duration of the disease, the average was about fourteen days, varying from six to twenty-two. Several went through a light attack of the disease, without taking to the bed, complaining of pains in the head, back, and limbs; loss of appetite and loathing of food; languor and debility, which lasted from two to four or five weeks. Some, who had been exposed to the disease, had copious and very offensive sweats and urine, without the other above-mentioned symptoms. No facts were observed that had any special bearing on the question of critical days. The difficulty of designating the day on which the fever may be said to have commenced, precluded the possibility of arriving at any certain conclusion on this point. If we date from the day when the patient takes to his bed, we shall greatly err, inasmuch as there is good reason to believe that the access, or forming stage, often ends some days before this event. Nor can we be more precise in regard to the date of convalescence. We can often determine, it is true, when the febrile symptoms abate, but it is often very difficult, owing to the gradual manner in which it takes place, and it is rendered still more difficult in cases where complications exist. It appears, from consulting Dr. Flint's *Report on Continued Fever*, that the average duration of his cases of typhoid fever, in private practice, was fourteen days, and of hospital cases, twenty days. My fatal case terminated on or about the fourteenth day.

The *circumstances attending convalescence* were not especially remarkable. In general, it was slow but steady. The strength was a long time in returning. The patients complained of their knees remaining particularly weak, so that they walked unsteadily, and were often in danger of suddenly falling. The bowels were generally inclined to costiveness, rendering it necessary to take laxatives, enemata, and food of a relaxing tendency. The appetite was, for the most part, craving. In one case a relapse occurred from eating too heartily of improper food in the early stage of convalescence. In a few cases convalescence was attended with copious perspiration at night. In general, there was a gradual decline of the febrile symptoms, and not a sudden abatement.

No *sequelæ* of the disease were observed worth particular notice. In one, *deafness*, which had been a prominent symptom throughout the disease,

was very slowly recovered from. In no instance were glandular swellings or boils observed to follow the disease.

As but two fatal cases occurred in over fifty, and of these no opportunity for post-mortem examination occurred, we can, therefore, say nothing of the pathological appearances.

Treatment.—A few brief remarks on treatment must suffice. The following remarks embrace the results of my observation and experience as regards the management of typhoid fever, derived not only from the present epidemic, but from all I have seen and known of the disease, at home and abroad, for the last thirty years:—

I. Typhoid fever runs a definite course, is a self-limited disease, and tends spontaneously to a favourable termination. When uncomplicated, the whole management may be summed up *in good nursing, great attention to cleanliness, free ventilation,* and SUITABLE AND SUFFICIENT NOURISHMENT. Generally, no medicine whatever need be given. The bowels may be kept open by simple enemata of tepid water; the temperature of the surface regulated by frequent sponging with spirit and water; and, if there is excessive or preternatural heat of the head, cloths wet with ice water should be frequently applied. Active medication by cathartics, emetics, bloodletting, and blisters, only tends to thwart the natural tendency to recovery, to disturb the recuperative efforts, and to protract the case, besides adding greatly to the sufferings and discomfort of the patient. I have never seen or known a case of typhoid fever cut short or materially abridged by treatment; but I have known many protracted and rendered incurable by unnecessary activity.

II. The disease exhibits striking diversities, at different times and places, as regards severity, duration, and mortality, irrespective of measures of treatment;[1] but these diversities may modify the management, *so far as the kind and quantity of the nourishment are concerned,* it being assumed that in all cases the utmost attention is paid to cleanliness and ventilation.

III. The above conclusions apply to uncomplicated cases, where no local complications exist; and these are the most frequent sources of danger. *Cerebral complications* are to be combated by the appropriate remedies, such as leeches to the inner nostrils, the temples, and behind the ears, or cups to the back of the neck, if there is evidence of fulness of the cerebral vessels, removal of the hair, cold evaporating lotions, and stimulating pediluvia. It is to be noted, however, that cephalalgia, somnolency, insomnia, and delirium are, to a considerable extent, natural elements of the disease, and do not, as a general rule, indicate too great fulness of the vessels of the brain. They, for the most part, at a certain stage of the disease, subside spontaneously under the rational expectant treatment. *Somnolency* is usually benefited by opiates, understanding by it that condition of semi-

[1] See Flint's Report on Continued Fever, p. 262.

consciousness from which the patient is readily but momentarily roused. *Insomnia*, or *vigilance*, demands also the use of opiates, as Dover's powder or morphia. *Delirium*, unless very active, demands no special treatment, appropriate general means being all that is usually required. Its presence does not contra-indicate the use of opiates. It may be abated by the use of *antimony* in small doses, in connection with anodynes; but its liability to disturb the stomach, and irritate the gastro-intestinal mucous membrane, renders its use objectionable. If used at all, it must be in very minute doses, and those only temporarily, and combined with demulcents and opiates. *Nausea and vomiting* will usually be promptly relieved by a sinapism to the epigastrium, or small effervescing doses of citrate of potash, aided by small doses of morphia. *Diarrhœa* yields to sinapisms and turpentine to the abdomen, anodyne and astringent enemata, and the internal use of opiates. Unless the discharges, however, are so frequent as to debilitate the patient, they should not be interfered with, especially if of a bilious character. *Hemorrhage* from the bowels is readily controlled by *opium, acetate of lead*, and *tannin*, administered by the mouth and by enema. *Constipation* may be obviated, generally, by simple laxative enemata. No active cathartics should be administered, as they are apt to bring on diarrhœa. If the discharges are colourless, a few grains of *blue mass*, or *hyd. cum creta*, followed by a teaspoonful of *ol. ricini*, will be proper. Generally, however, we aim to dispense with cathartics as far as possible in the management, believing that their use is hazardous, and tends to complicate the case. If used, the mildest are to be selected, as oil, magnesia, &c. If cathartics are not employed, the discharges will usually present a natural and healthy appearance throughout the whole course of the disease. *Meteorism*, or *tympanitis*, should be met by warm spirituous fomentations, or warm turpentine to the abdomen, enemata, and, if costiveness be present, a moderate dose of oil. *Abdominal tenderness* may require the same external means. *Pulmonary complications* will also require some modification of the treatment. If *pneumonitis* be present, cups or leeches over the part affected, followed by warm cataplasms, fomentations, or sinapisms, will generally be proper. General bleeding is rarely if ever admissible; and, in taking blood locally, we must carefully regulate the quantity by due regard to the constitution and strength of the patient, stage of the disease, and the extent of the local complication. The inflammation is rarely, if ever, of an active kind, and, as a general rule, rarely demands active measures. We have long since discarded antimonials and blisters in this complication, the former as too debilitating and locally irritant, the latter adding greatly to the irritability of the patient, and not attended with a corresponding degree of benefit. Sinapisms answer a far better purpose. *Mercurials* are for the most part uncalled for, unless occasionally, as when, already stated, a cholagogue effect be desired. Pulmonary or bronchial congestion, or inflammation, in typhoid fever, does not

contra-indicate the employment of supporting measures. *Cough* may be allayed by opiates and demulcents, and expectoration promoted by small doses of the infusion or syrup of senega and liquorice. *Peritonitis*, if attended with perforation, will generally prove fatal under any treatment. Opiates in large doses promise the most success, aided by external fomentations, and sinapisms, &c. If unattended with perforation, the same measures will also be proper. *Apoplectic coma*, if the result of effusion, will terminate in death; if owing to exhaustion of the nervous energies, wine, brandy, and animal broths will be the appropriate remedies. Pharmaceutical *tonics*, such as quinine, &c., I have never found of much benefit in this disease. *Cinchona*, in any of its preparations, has no special curative power in this form of fever, though so admirable in intermittents and remittents. It is very apt to offend the stomach, and lessen the desire for food. *Suitable nutriment*, however, is of the first importance. Facts abundantly sustain the conclusion that the digestion and appropriation of food are not suspended, but go on in this disease. Nothing is more common than to find the evacuations remain nearly if not quite natural throughout its whole course. The stomach is not disturbed by proper food in proper form, and in proper quantity. An error in either of these respects is easily committed, and will result in injury to the patient. The grand indication, indeed, is to sustain the patient, while the disease runs its natural career. The *patient* is rather to be treated than his *disease*. Nutritious aliment, such as beef-tea, essence of beef, milk porridge, &c., may be commenced early in the disease, Dr. Flint thinks at the end of the first week. We should say on the first day, and continued through its whole course. Strong *chicken soup*, with barley or rice, will do well for a change; though the essence of beef is indispensable where there is much prostration. These articles are to be given at short and regular intervals, without any particular regard to the patient's tastes or wishes, in small or larger quantity, according to the condition of the patient, and often in connection with appropriate stimulants, as wine or brandy. The following remarks of Dr. Flint on this subject are so true and appropriate that I cannot forbear quoting them: "Nutriment must be administered not only irrespective of any expressions of desire by the patient, but without reference to his appetite, and even when taken with disgust. If the sense of hunger, the appetite and the taste are competent to govern the ingestion of food in a state of health, this is not true of continued fever. The proper exercise of these functions involves normal mental perceptions. In health, the mind feels certain impressions derived from within the organism, by which the desire for food, or hunger, expresses the demand of the system for fresh supplies. The mind, in health, experiences pleasure from the ingestion of aliment, in other words from the indulgence of appetite, and is capable of discriminating appropriate kinds of food by the sense of taste. All this is changed in fever. The mental perceptions thus fail to respond to the

wants of the system; the mind lacks sufficient healthful activity for appetite or taste. The system, nevertheless, needs the addition of new materials for calorification and nutrition; and the power of assimilation, although impaired, is not wholly lost. The indication for nutriment, in short, exists; but the criteria pertaining to the consciousness of the patient, by which the indication may be measured in health, are perverted or suspended by the disease, so that it becomes necessary to fulfil the indication without consulting the mental functions, viz., hunger, appetite, or taste, which were doubtless designed to secure an adequate supply of proper aliment in health."

The tendency to death, it may be added, in fever, is from asthenia. We guard against this danger in the most effectual manner by giving proper nutriment. Innutrition, coöperating with the essential morbid condition in fever, will give rise to delirium, prostration, and all those alarming symptoms which are generally supposed to spring from the disease itself.

P. S. Aug. 2, 1859.—Two new cases of typhoid fever only have occurred since the above paper was written, viz., the wife and daughter of a man who went through a very severe attack of the fever, and who was believed to have taken it from watching several nights with one of the sick. The fifty or more cases which have occurred, have been scattered over a district six or eight miles square, and all can be traced to exposure to the disease, except the first case, which was sporadic. No person else has been attacked, unless personally exposed. It is needless to add that this would not have happened, had the cause been atmospheric, or general, nor would it have been spread over so large a space, had it depended on local vegetable or animal decomposition. Moreover, it commenced in the coldest weather in January, and on the highest hill in this region of country, where, even in summer, no local cause of fevers exists, the locality, being, in all respects, most healthy. I submit, then, that the history of this epidemic goes to sustain the conclusion—now very generally adopted—that typhoid fever, though it may originate sporadically, from ordinary causes, yet may be propagated by idio-miasmatic effluvia, or personal infection.

ART. III.—*Amputation at the Shoulder-Joint.* By B. J. D. IRWIN, M. D., Assistant Surgeon, U. S. Army.

ON the 16th of September, 1858, I was requested to visit one of the stations of the Southern Overland Mail Company, where a number of men were reported to have been dangerously wounded. I set out at once, and arrived

at the place early the next morning, after a smart ride of one hundred and fifteen miles, but found that three of the four wounded men had already died. The history of the survivor, Silas St. John, a strong, robust, healthy young man, æt. 24, a native of New York City, was as follows: He, with three Americans and three Mexican *boys*, was engaged in keeping the mail station. On the evening of the 8th, one of the latter was placed on guard, and the remainder of the party retired to rest for the night; about midnight the Mexicans arose, and with axes and a large hammer attempted to murder their sleeping companions. St. John awoke, and hearing blows given, was in the act of springing from his bed when he received a terrible blow from an axe, which almost severed his left arm from his body, followed quickly by another that cut the fleshy part of the same arm in a shocking manner; this was succeeded by another stroke that cut through the anterior external portion of the right thigh, a short distance below the joint. By this time he succeeded in grasping his pistol, and having fired at the desperate assassins, they fled and were seen no more. One of the unfortunate victims who slept outside of the door of the rude shed never awoke; another, with his face and head frightfully chopped and mangled, lived in great agony until the evening of the next day; while a third, whose head was almost cloven in two, the brain continually oozing from the shattered skull, lingered until the *sixth* day, during which time his frenzied craving for water to quench his burning thirst was of the most heart-rending character. On the evening of the next day the mail stage came by and found St. John, the only survivor of his party, alone in a rude hovel in the wilderness, without food or water, unable to move; his wounds undressed, stiffened, and full of loathsome maggots; his companions had died one by one a horrible death, and lastly, to add to the horrors of his suffering, the hungry wolves and ravens came and banquetted upon the putrefying corpse of one of his dead companions which lay but a few feet from his desolate bed. The mental and physical sufferings which he endured are marvellous to think of. Yet he never complained nor flinched for a moment. Calm and resigned, he bore his torments with the fortitude of a martyr.

After administering to his immediate wants, one of the mail party was left with him, and remained until my arrival on the 17th, at which time his condition was as follows: he was weak and pallid from loss of blood, sleep, and constant mental and physical suffering; his disposition was cheerful, and he evinced much pleasure at the prospect of having his wounds attended to. A deep, incised wound, about eight inches in length, extending from the point of the acromion process, passing inwards, downwards, and backwards, laid open the shoulder-joint, passed through the external portion of the head of the humerus, and thence downward, splintering the bone through about four inches of its course. The wound in the thigh proved to be only a severe lesion of the soft parts, about eight inches long and three deep.

After a careful examination, I saw it would be impossible to make any effort to save the arm; I therefore determined to remove it at once. The patient was informed of the necessity for the operation, and his permission was accorded almost cheerfully. The only assistance that I could command was from three of the men forming my escort. Having made a kind of bed of some bags of corn, the patient was placed on it. One of the men having been instructed how to compress the axillary artery, and the other assistants properly disposed of, I removed the limb as follows: the patient lying on his back, with the shoulder elevated, I placed myself on the outside, and grasping the arm, I passed the catling through the original wound, thence inwards behind the fractured point of the humerus, and downwards, forming a large flap from the anterior and inner aspect of the arm, which made up for the deficiency caused by the character of the wound, which left the superior-posterior aspect of the joint entirely devoid of muscular tissue. With the aid of a scalpel, the remaining portion of the head and neck of the humerus was removed from the glenoid cavity, the granulated surface of the old wound revivified, and the arteries tied as quickly as possible, after which the edges of the wound were brought together and retained by interrupted sutures and some bands of adhesive plaster. Cold-water dressing was applied, with a light bandage suitable to the part. The wound in the lower limb was dressed by inverting the large fleshy flap, and retaining it in its normal position by several interrupted sutures. Cold-water dressing and the maintenance of the thigh in a semi-flexed position were the only requisites here. Forty drops of tincture of opium were administered, and the patient placed in as comfortable a bed as the meagre circumstances of the place would permit. Chloroform was not at hand to be given, and the only stimulus obtainable was a few drachms of essence of ginger. The celerity with which the operation was performed, and the fortitude and excellent disposition of the patient, saved him from everything like protracted suffering. In the evening, the *tinct. opii* was repeated, and proper directions having been given for the dressing of his wounds, I left him, having previously sent for some wine, brandy, and other nourishment. Of the former, f℥viij, and the latter, f℥iv, were allowed him daily.

During the night of the 23d he arrived at the fort, having travelled in a common wagon sixty miles over a rough road during the two preceding days; and, as he was weak and fatigued, half a grain of sulphate of morphia was given him, and he was placed in a comfortable bed. Next morning I examined his wounds, and found the lesion at the shoulder had united by first intention, save at a point where the ligatures protruded. The wound in the thigh had partly opened. Proper dressings were applied, generous diet given, and the patient continued to convalesce without an untoward symptom. Most of the ligatures came away between the ninth and twelfth days, and on the 15th the last, that from the axillary

artery. Occasionally he suffered from frightful dreams, and imaginary pain in the lost arm. Whilst recovering, he had two attacks of quotidian intermittent fever, which readily yielded to quinine. On the 24th day after the operation he was walking about, and in less than six weeks he started for the Eastern States, restored to perfect health.

FORT BUCHANAN, ARIZONA, April 10th, 1859.

ART. IV.—*Vesico-Vaginal Fistula.* By C. S. FENNER, M. D., of Memphis, Tenn.

THE operation for the cure of vesico-vaginal fistula has now become fully established. For this grand surgical triumph we are indebted to the skill and persevering energy of Dr. J. M. Sims. It was accomplished only after years of intense application, much reflection, and many ineffectual attempts, each of which stimulated him to renewed exertions, and suggested to his mind changes and improvements, until success crowned his efforts, and placed him before the world as one of the benefactors of the nineteenth century.

Since the publication of Dr. Sims's first successful cases, the only material changes or improvements in the operation have been in the manner of fastening the sutures. Dr. S. has abandoned his "clamp suture," and adopted simply the "twisted interrupted suture." Dr. Bozeman uses a plate of lead perforated with holes, through which he draws the ends of the wire and fastens them; denominating it the "button suture." I have, on two occasions, used what may be called the single shot suture, passing both ends of the wire through a perforation in a No. 6 shot, and forcing it down on the wire until the denuded parts were brought in contact; then fastening it, cutting off the wire, and turning the ends down in opposite directions over the shot. This method of holding the suture in place is similar to that used by Dr. Bozeman in fastening the wire after it is passed through the perforation in his button.

Within the last few months, I have operated on four cases of vesico-vaginal fistula, a report of which I give below:—

CASE I.—Maria, a servant girl, aged 18 years, came under my charge, Oct. 3d, 1858, with vesico-vaginal fistula of ten months' standing; was delivered of her first child after a difficult labour requiring the aid of forceps; child stillborn.

Examination.—Found an oval fistula, of sufficient size to admit the end of the little finger, situated in the left side of the vesical trigone.

Operation.—Assisted by my friend, Dr. W. B. Wright, I freshened the edges, introduced five silver sutures, and brought the parts together by simply twisting the ends of the wire, as recommended by Dr. Sims. The

day after the operation, her menstrual discharge came on, and lasted five days. At the end of eight days, I removed the sutures, and found union perfect. She wore the catheter a few days, and then returned to her labour in the field, and remained entirely well for five months; when a slight dribbling of urine came on, and she was sent to me again. On examination, I discovered a minute opening in the cicatrix which would admit the end of a small probe. I closed this by another operation, but, in this instance, union did not take place. In a few days I repeated the operation, in presence of Drs. Borland and Willet, introducing three stitches, and on removing them on the sixth day found union perfect.

CASE II.—Mrs. T., from Mississippi, aged 20 years, was sent me, Oct. 20th, 1858, by Dr. J. S. Davis. Had her first child eight months before, after a difficult labour requiring the use of forceps. The child was born alive, and of large size. After delivery she had no control over the contents of the bladder.

Examination.—Found an opening half an inch in its longest diameter, in the vesical trigone, on the left side; pelvis unusually small; labia much excoriated from constant contact with urine.

Operation.—Assisted by Drs. Tucker and Woodward, the edges were pared, four sutures introduced, and the wires simply twisted. On the eighth day, removed the stitches, and found union entire, except at a point not larger than the head of a pin, which I hoped would close by the application of the nitrate of silver. She preferred to return home and wait awhile before submitting to another operation. Dr. Davis applied the caustic, but without benefit. He wrote me, under date of Nov. 11th, as follows: "I saw Mrs. T. this evening, at her house, and found her more cheerful than usual. She says, by lying on her right side, she passes the whole night without the escape of a drop of urine, and in the morning discharges it pleno rivo; but after being up for a few hours, it begins to run away by the fistulous opening." She came to me for another operation, June 8th, 1859. I found, on close examination, a minute opening just below the line of the cicatrix, not larger than a bristle. After paring the parts, I introduced three twisted interrupted sutures, and on removing them on the seventh day, found union perfect.

CASE III.—Hannah, a stout, healthy negro woman, came under my care, April 7th, 1859. She was about twenty years of age; was delivered of her first child two years ago, after a difficult labour. The child was stillborn. The urine has not been retained since.

Examination.—Found a large circular opening in the bas-fond of the bladder. A considerable portion of the anterior lip of the cervix uteri had sloughed away, leaving a thin sharp edge just at the os. The vaginal canal was shortened nearly one-half. From the root of the urethra to the anterior edge of the fistula, it was one inch; the anterior edge entirely unyielding, and the sides could not be brought together laterally.

Operation.—I pared the edges, including the surface left at the os uteri, introduced five sutures, and, on twisting them, found the parts both on the right and left side came together; but the stitches passing through the uterus failed to approximate the parts, and finally tore out. On the eighth day, I removed the remaining stitches, and found union had taken place on each side of the os uteri. A few days afterwards, I freshened the edges again. The uterine surface that could be pared was not more than two lines in breadth, extending half an inch transversely. I introduced four sutures,

drew down the womb; to do which the speculum had to be withdrawn, leaving the point just beneath the sphincter-ani muscle. The sutures were twisted and left ten days; and, on removing them, I found some union had taken place at the sides, leaving a triangular opening, the base being formed by the uterine edge of the fistula. The rigidity of the parts preventing the sides of the fistula from approximating, and the uterine portion acting as a wedge to keep the edges apart, I determined on a different operation. I passed a knife within the os, and cut out an inverted ∧ portion, including all the thin part left from the sloughing, extending the incision down each side of the fistula. One stitch was passed through the cervix uteri, and two others laterally through the sides of the fistula, and each fastened with a single shot, as described above. Union took place from the os uteri down nearly three-fourths of an inch, greatly reducing the sides of the opening, which I think can be closed by another operation; but the patient being considerably reduced in strength, I thought it best to wait until cool weather before making further effort to cure her.

Case IV.—Mrs. F. came to me on the 19th of April last. She was 41 years of age, the mother of seven children, two of whom are living. Was confined with her seventh child sixteen months before. Says she was in labour four days, and that her water was not drawn off during the time; child stillborn. Since delivery has not been able to retain her urine.

Examination.—I found union between the root of the urethra and the posterior wall of the vagina, preventing the introduction of the speculum. I divided this, and found three lines of the urethra gone, and an opening in the neck of the bladder capable of admitting only a very small catheter.

Operation.—I pared the edges freely, and brought the bladder down so as to cover the lost portion of the urethra, introduced five sutures, a part of which were fastened by the single shot, and the others in the usual way. The patient was unusually restless, and on the fifth night got the catheter out, and notwithstanding my strict injunction to apprise me immediately should that accident occur, her husband permitted it to remain out until morning; the consequence was that, before the catheter was reintroduced, a slight escape of urine had taken place, caused by an accumulation of water and the consequent giving way of a small portion of the newly formed cicatrix. The stitches were removed the seventh day, and union found entire, except at one point, where there was an opening which permitted the urine to pass drop by drop. This I closed by another slight operation, and on removing the stitches on the sixth day found union perfect.

Art. V.—*Cases of Disordered Menstruation producing Phenomena simulating the Symptoms of Grave Diseases.* By I. Moses, M. D., of New York.

A most interesting case of vicarious menstruation having come under my treatment during the last few months, I was induced to look back through my records, and, in so doing, found several cases of interest, which I propose to add to the number already recorded in the medical

journals. Very little has been given in the writings of our best authors concerning this form of disordered action, except a short statement that it occurs, and the history of a few cases; nor do we find any attempt at explanation of the singular phenomena which are observed. We hear of every tissue secreting the blandest and minutest moisture, pouring out blood in great quantities at the menstrual nisus, and again resuming its naturally quiescent functions, only again to wake angrily at the re-approach of the menstrual period; and yet these tissues and organs suffer no injury, and retire modestly to their proper sphere of action as soon as the recreant uterine apparatus is brought to its usual and accustomed propriety.

It is related of a female who did not menstruate that every month her cheeks became unusually red, and, remaining so for a few days, relapsed into their accustomed hue. Epistaxis, hæmatemesis, hæmoptysis, hæmaturia are the most frequent forms of vicarious hemorrhage; but the eyes, eyelids, auditory canal, gums, mamma, umbilicus, hæmorrhoids, the scalp, and ends of the fingers are the sources of hemorrhage. Old ulcers and cicatrices sometimes take on menstrual action. Of all these, there are recorded examples. The lungs and stomach are more frequently the organs of perverted action. The vicarious flow is generally shorter in duration, or less in quantity, and in many cases both; and then again, on the other hand, it may be both more abundant and longer. A sense of fulness or congestion is often experienced at the seat of these hemorrhages for a few days previous to the occurrence of the discharge, but again no warning will occur.

It has been attempted to be proved that the blood which flows at these periods is different from that which would be produced at any other time; but there is no satisfactory evidence of its peculiarity. No unfavorable effect seems to be the result of these abnormal hemorrhages, no matter what organ may be the seat. A case is recorded in which a nun, who had amenorrhœa, coughed up blood, more or less, every month for twenty-five years, without any modification of her general health. There is a case recorded by Pinel, and quoted by Watson in his lectures, in which a female menstruated vicariously from her fourteenth until her fifty-eighth year. Dr. Latham also mentions a case where a female menstruated from her stomach until the occurrence of pregnancy, when it entirely left her.

Perhaps the only benefit to be derived from a history of such cases is to prompt the practitioner to look, in all inexplicable symptoms arising in females, to their generative organs; and, as a prelude to all other treatment, bring them, when altered, into the natural condition; and, of the value of so doing, the history of the following cases will abundantly testify:—

CASE I. *Vicarious Menstruation from the Umbilicus.*—Catharine ——, æt. 16, native of one of the Eastern States, has always been a stout, healthy girl, and is now full in figure, and womanly developed, with bright face and rosy cheeks; has suffered lately with severe headache and torpid bowels;

has never menstruated. A few months ago, a slight oozing of blood took place from the umbilicus; and every month since then it has returned with general symptoms of plethora.

It will be sufficient to say that low diet, active exercise, decided cathartics, and remedies addressed to the excitation of the uterine discharge, soon established her natural periodic flows.

Case II. *Vicarious Menstruation from the Skin.*—Ellen Chambers, aged 26, native of Ireland, and unmarried, of nervo-phlegmatic temperament, light sandy hair, dull, pale complexion, and full figure, has suffered from irregular menstruation for several years, with slight leucorrhœal discharge. About a year since, her menses entirely stopped; and soon after an eruption began to make its appearance on the neck, extending to the axilla, to the folds beneath the mammæ, and in the inguinal region. She used various articles under the direction of her physician, which seemed to relieve her for a time, but the eruption, which was vesicular in character, would again break out, and she noticed that this occurred about the time when she ought to have been *unwell*. When I saw her a few days before her anticipated exacerbation, the eruption was dry and scaly, as if nearly healed. I determined to leave her alone, so that I might observe the phenomena which were anticipated. At the approach of the period, a deep redness spread itself over her neck and on the parts referred to before, with pricking, burning, and itching, and the next day a glossiness over the whole, caused by the eruption of small vesicles, which soon began to discharge copiously a thin yellowish sticky fluid, which either dried, and formed a crust, or wet the handkerchief covering the parts. The same course was observed in all the localities referred to. The discharge was far more profuse than would have occurred in a case of ordinary eczema. The general health was not at all affected, except that the patient was "languid." The continuance of the discharge was about the same as a prolonged menstruation, lasting about a week.

A recurrence of these phenomena was observed twice before her menses were restored to their natural channel. Hip-baths, electro-magnetic currents, small blisters inside the thighs, and emmenagogues were used. Her menses were at first scanty, but finally she enjoyed perfect health.

Case III. *Vicarious Menstruation from an Ulcer on the Head.*—Caroline S——, aged 18, native of Massachusetts, unmarried, well developed, of sanguine temperament, bright colour and dark auburn hair; has not led a perfectly virtuous life, though she has not been dissipated, having resided in the city only a short time. On investigating her case, I found her suffering from two very extraordinary diseases. Her menses had never been regularly or fully established; they had been scanty and painful. About four months ago, they entirely stopped. Soon after, an eschar on her head near the vertex, which was the result of an injury when a child, and which, up to the present time had remained perfectly quiescent, began to trouble her; at first painful, and then opening again, began to discharge a sanious fluid. This occurred at the menstrual epoch; but its connection did not strike her until her attention was called to the fact.

This young woman was the subject of a complete procidentia uteri. The entire organ when not supported, dropped externally to the vulva, somewhat enlarged in size, but healthy in color and texture, the os tincæ small and round. This had been gradually coming on for a year, protruding

more and more and perfectly reducible. She had at first worn a pessary; but it only produced irritation and did not prevent the procidentia. During the period she was under my care, I confined her mostly to a recumbent position, with an abdominal supporter to take off the weight of the intestines and vaginal enemata of decoction of white oak bark, a favorite remedy of mine in most cases of uterine and vaginal relaxation.

This case was very obstinate, and for several months resisted treatment. The ulcer on the head never entirely healed, but during the intermenstrual periods became dry and covered with a dark scab. On the approach of the nisus, the scab cracked, peeled off, and left a surface as large irregularly as half a dollar, secreting a sanguineo-purulent fluid.

The case passed from under my observation without any material change. The procidentia did not trouble her as long as she continued to wear the supporter.

CASE IV. *Vicarious Menstruation from the Lungs and Intestines.*—Mrs. L. E. L——, aged 25, native of New York, tall, of full figure, and having every appearance of good health, of a melancholic temperament. About four years ago (1854), her menstrual functions became deranged, less in quantity, lasting a very short time, and finally ceasing entirely. About this time, she began to have pains in the chest and left side, cough, and hæmoptysis. She then made a sea voyage, and had a severe illness (cholera), from which she recovered. The same symptoms of pulmonary trouble have continued irregularly. About two years since, she began to be affected with dysentery, which has been almost constant ever since, both the hæmoptysis and dysentery coming on about the menstrual nisus, or being more abundant at that period. Occasionally, she would have interludes of complete freedom from either, and sometimes from both. At times, a menstrual effort would take place, lasting an hour or a day, and then ceasing. During all this time (October, 1858), Mrs. L—— has been constantly increasing in weight, and weighs one hundred and forty-eight pounds.

During the last six months, there has been but two feeble efforts at menstruation, and none at all for four months. About a month ago, at the last period, she had a more copious hemorrhage than usual from the lungs. There has been more or less hæmoptysis and dysentery during the last few days (October 20th). She has been treated for both these symptoms by several practitioners, and considered to be a victim of tubercular disease, which was destined at some time to prove fatal.

Upon a thorough investigation, as all these discharges seemed to take the place of and in fact form the menstrual flow, I did not consider that any medicines were indicated, but those which had a tendency to act directly on the uterus. As her regular menstrual epoch occurs about the seventh of November, I propose to begin her treatment. A married sister of this lady suffers in a similar manner.

November 1. I directed the patient to take a hot hip-bath every night, to keep the pelvis covered with flannel during the day, to take her usual exercise in clear weather, but remain home when it was cold and wet—to have electro-galvanic currents through the pelvic organs, morning and evening, for twenty minutes, and take a pill of iron and ergotine three times a day.

11*th.* Mrs. L—— called to-day to report that she pursued the above course faithfully, except that the electro-galvanic current was omitted on two days in consequence of the instrument getting out of order. The

menstrual flow commenced on the 9th, and continues healthy in character and quantity, and not attended with any unusual pain; and, to use her own words, "she hardly knows herself."

16*th.* Called to-day to report that her menses continued, during five days, natural in all respects, and that there has been no hæmoptysis since the 28th ult. Her bowels also have been natural, without uneasiness, until last evening and this morning, when she has had pain, but no dysenteric discharge. She feels very well.

December 6. Has suffered a good deal from fulness about the loins and back. On the 3d, her menses came on, but only lasted about an hour. At the same time, she suffered from diarrhœa, which lasted two days, thus taking the place of the menstrual flow.

23*d.* Menses began on the 16th, and ceased on the 20th. Diarrhœa and severe pain co-existed, both of which ceased with the menstrual flow.

January 24. The regular period should have been about a week ago. For several days previous, she had followed the same course of hip-baths, electro-galvanic currents, ergotine, &c. &c., but without success. On my visit this morning, I found her in bed, having suffered, for the last five days, violent pain in the lumbar region, like labour pains, extending down the thighs, with general febrile movement, loss of appetite, and restlessness. Her tongue is furred and pasty; skin warm, but moist; pulse 100, full, soft, and compressible; fulness and some tenderness in the hypogastric region. I proposed a further examination, by speculum, into the condition of the uterus, feeling confident that there must be some local inflammation. The lady readily consented to do anything that would contribute to her relief. I therefore appointed a time, and directed some leeches to be procured. At 2 P. M., I made the necessary exploration, and found the neck of the uterus very much enlarged, of a deep crimson colour, and a patch of granular surface, somewhat larger than a twenty-five cent piece, encircling the os tincæ; more on the anterior lip, and the upper part of the vagina filled with thick, tenacious, muco-pus. The leeches were applied, filled, and after bleeding promoted by a hip-bath.

27*th.* Feels much better in all respects; less pain in the limbs, and none in the back; some headache; *no menstrual discharge, no hæmoptysis, and no trouble of the bowels.* This is the first period where one or the other has not occurred for four years. On speculum examination, the neck is still swollen, and dark from congestion; a broad, irregular, granular roughness around the os tincæ, to which a strong solution of argentum nitratis was applied by soft sponge, and injections of infusion of white oak bark twice a day directed.

31*st.* There has been a slight red discharge for the last twenty-four hours. On introducing the speculum, the granular surface poured out blood freely. I applied the solid nit. argent.

February 2. The discharge noticed above turned out to be menstrual, and continues to the present time, with decided relief to all her symptoms, except pain and bearing down in the back. The discharge is very copious and clotted.

4*th.* The flow is now ceasing, having been free for over six days, with relief to all pain and fulness. She is much better, though depressed in spirits on account of family griefs. On examination, the neck is very much diminished in size and paler, the granular ulceration much less florid, a menstrual discharge, darker than natural, from the os, which is broad and patulous. Sol. nit. argent. applied.

19*th*. The caustic solution was applied on the 10th, 14th, and to-day. The neck is still more reduced, pale, and soft; the ulceration contracted and smooth; little or no mucous discharge; general health good.

On the morning of the 13th of March, the menses appeared, and continued, until the evening of the 15th, quite free and natural, attended with some pain in the back, and free state of the bowels.

The next menstrual period occurred about the proper time, attended with the same free state of the bowels, and preceded by some lumbar pain. Her general health is excellent; and she considers herself well. The system will soon accustom itself to the re-established natural flow; and I presume the bowels will then no longer be free at the monthly flow.

June 1. Her health is completely re-established.

A somewhat similar case to the above is recorded in the *Edinburgh Medical Journal* for April, 1859. A lady, aged 53, had several attacks of hæmoptysis, coming on regularly at the monthly period, attended with cough and pain in the side. The chief point of interest in this case is the late period of life at which the vicarious hemorrhage occurred.

CASE V. *Vicarious Menstruation from the Stomach.*—Mrs. M. C——, aged 26, married, native of New Brunswick, has suffered from dysmenorrhœa for the last six years; has been married, and had a child about eighteen months ago. Following her delivery, she had inflammation of the bowels and uterus, and since then has suffered from deficient menstruation. For the last eight months, she has raised blood quite freely, generally coming on about the menstrual period. She suffers more or less from headache, pain in the back and loins, and shooting through the chest. No distinct signs of any disease of the lungs; bowels usually constipated.

July 17. Yesterday, a discharge from the vagina took place of an offensive character. She has frequent desire to pass water, but passes a little at a time; complains a good deal of tenderness about the lower part of the bowels; vomited last night about two tablespoonfuls of blood; bearing down pains in the back and pelvis; her chest felt better while the discharge was on, but worse since it stopped.

31*st*. Has suffered with all the symptoms of great congestion about the pelvic organs; vomited yesterday afternoon some blood; great bearing down in the pelvis and lumbar region, down the thighs and ankles. Free cupping to the lower spinal region ordered.

August 3. Has been cupped every day over the lumbar region with marked relief. The speculum disclosed no enlargement; small granular ring around the os tincæ, with a constant discharge of thin muco-pus. Her appearance is that of perfect health.

September 15. A continuance of counter-irritation and depletion from the lumbar region with blisters and croton oil entirely relieved the internal congestions; the os tincæ was twice touched with the caustic pencil; and being now in a very comfortable and healthy condition with return of menstrual function, she passed out of my observation.

CASE VI. *Amenorrhœa, with Enlargement of one of the Hands and Forearm.*—About fifteen years ago, I saw a case of a young woman who presented herself at various public institutions, and was, if my memory serves, at one time an inmate of Bellevue Hospital about the year 1845. From cold and wet, her menses had ceased; and soon after she was seized with swelling of one of the hands and forearm, foot and leg, resembling elephantiasis, for which she was under treatment for two years.

I was informed that, after resisting all treatment, and it being proposed to amputate the arm, she subsequently entirely recovered by means directed to bring on the catamenial discharge. As I have no notes of this case, and it only impresses itself on my mind in connection with this subject, I must apologize for so meagre a history.

Case. VII. *Amenorrhœa giving rise to the Symptoms of Tetanus.*—E. P——, aged 19, native of the city, suffering from amenorrhœa, was seized, January 19th, with a violent attack of spasm, rigid closure of the jaws, and at first she was supposed to have trismus; but, after some little time, it was found on trial that the jaws could be separated, the patient struggling very much against it. The case rather leading to a suspicion that it was hysterical in character, an emetic was administered, and a fetid enema, both of which operated well, with complete relief to the symptoms.

Case VIII. *Amenorrhœa producing Aphonia.*—Mary Ann D——, aged 25, native of Connecticut, thin and pale, of highly nervous temperament, had always suffered from irregularity, and latterly from amenorrhœa; subject to hysterical attacks; has been gradually losing her voice, and now (May 27th) is only able to speak in a low whisper.

She was subjected to the usual course to bring back the healthy flow, but without success. She took sulphate of zinc in large doses, Fowler's solution, electro-galvanism through the neck and tongue, shower-baths, and a host of remedies without success, and was then directed to go into the country. While there, a steam-doctor gave her a *medicated steam* bath; and, a few days afterwards, her voice returned as naturally as ever.

Case IX. *Amenorrhœa inducing Sciatica.*—Ann D., aged 19, single, arrived from Ireland in April eight months ago; was unwell a week before she left home, and since then has been regular but three times. About a fortnight ago her menses came on, but suddenly stopped from some cause (she thinks she took cold), and very soon she was seized with sharp pain in the small of the back, and down the right leg as far as the toe; subsequently, in the left leg, which has continued since more or less severe. Now complains (Nov. 1), of severe pain in the lumbar region, extending over the nates and down both extremities, which she compares to sharp penknives running into her. There is extreme tenderness on pressure over the lumbar vertebræ and sacrum, extending equally on both sides and over the nates, and to a less degree all over the limbs; there is no redness or swelling of any of the joints—no general febrile movement.

She was treated by electro-galvanism, cups, and blisters, and the usual remedies, and in the early part of January was completely relieved, with regular return of her catamenia.

Case X. *Amenorrhœa producing Chorea and Hysteria.*—Sarah C., aged 22, single, lately arrived from Ireland, since which she has felt weak and stupid. About two weeks ago, was obliged to leave her work, complaining of nervous fits and great debility, with twitching of the limbs; bowels torpid; menses coming on at regular intervals, but *exceedingly small in quantity.* The convulsive twitchings have been constantly increasing, affecting all the external muscles and the *diaphragm.* She is subject to attacks of laughing and crying. When she walks she stoops, and now and then stops, putting her hand to her stomach. General health good, no febrile excitement, and aspect natural.

September 5. Has taken for a week past iron and aloes, valerian and hyoscyamus, without any decided alleviation of her symptoms; twitching of the *muscles of the abdomen* is the most formidable symptom; she walks better.

On the 10th, her catamenia appeared scantily, after the application of electro-galvanic currents. On the evening of the 11th, she had a violent attack of hysteria, which lasted six or eight hours. The menses continued in small quantities for two days, during which she had constant and severe hysterical paroxysms. She was put upon the arsenical solution and active cathartics. On the 29th, her chorea and hysterical paroxysms, which had continued, but gradually diminishing in violence, entirely ceased; her menses came on, the discharge being natural, not attended with clots, nor with more pain than usual. She complained of great debility. Being treated in a hospital, she was sent in the country to recruit.

CASE XI. *Epilepsy produced by Amenorrhœa.*—Ann McCarty, aged 19, native of New York, entered the New York Hospital, Aug. 10th, 1844, while I was Resident Physician, having been suffering from amenorrhœa since December. Her general health continued good until about three weeks before, when she was suddenly seized with an epileptic convulsion, which lasted a few minutes, and a second convulsion on the same day. She recovered so as to attend to her work until the 6th, in the evening, when she had a third convulsion, and again yesterday morning (9th). During the intervals she felt as well as ever. She had slight hysterical crying fits. Has been bled and purged. On admission, she replied to questions rationally, but slowly and with effort; her articulation thick, complained of partial loss of motion on right side, with subsultus of right hand and arm, and sudden spasmodic contraction of the muscles of the fingers; skin and pulse natural.

August 11. Remained tranquil, after admission, until 2 A. M. to-day, when she was seized with convulsions, which recurred every fifteen or twenty minutes until 7 A. M.; head and extremities chiefly affected, mouth drawn to right side, fingers and toes strongly flexed, great restlessness, and could not be induced to speak. Her pulse became excited, and head hot. Cold to be applied to head; and cathartic given.

2 P. M. Continues in a drowsy state, indisposed to talk, considerable heat of head and skin; pulse 80, full and soft; some intolerance of light. She was bled from the arm ℥xij, her head shaved, and cold applied. Cathartic not having operated, a stimulating enema was ordered.

On the 12th, she remained stupid and unconscious, until after the free action of a cathartic, when she became quite bright; no pain in the head; pulse and skin perfectly natural; a small ulcer of left cornea noticed. Leeches were applied to temple, and opium wash to the eye.

15*th.* Has appeared perfectly well until last night, when she had an hysterical attack. Since last date, remained comfortable, except occasional vomiting up to September 2d, when she began to complain of pain in the head and dizziness, with increasing difficulty of articulation, heat of head, and febrile pulse. Twelve leeches were applied to the temples, followed by cold water, stimulating enema given. This being the period when her menses ought to appear, blisters were applied inside the thighs, electro-galvanism to the pelvis, and shower-baths to the head. This course was pursued without success. She remained comfortable until the 22d, when she had an attack of convulsions, affecting the right side of the face, upper

and lower extremities, without numbness or loss of power, or more pain in the head than usual.

October 2. This being the catamenial period, the same remedies were resorted to as last month, with bleeding from the feet, but again without success. On the 6th, had a regular epileptic convulsion, affecting, as before, principally the right half of the body; complains much more of pain in the head; skin and countenance not presenting any unusual condition; pulse 112, rather full and hard. Twenty ounces of blood were abstracted. Constant convulsions during the night and day of the 7th. She keeps up a shrill cry during the attacks, which are not attended with loss of consciousness, knowing when they are coming on, and when she is in them. She lost ℥x more blood last night, and ℥ix this morning, the convulsions continuing as frequent, if not more so, than before; has also bled some from the nose and mouth. Yet she answers intelligibly in a bright and plain manner. Pulse 144, small.

Has been taking camphor and hyoscyamus. She had only one convulsion on the 8th, and none again until the 16th, when she had five; on the 17th, five; and, on the 18th, six, with loss of senses, both sides being affected. When free from convulsion, she does not complain of headache nor dizziness. Her countenance is pale, but lively, and is perfectly sensible. Her fingers, especially those of the left hand, are contracted. She stutters a good deal in speaking. From the 18th, every day, she became worse and worse, the convulsions occurring from four to five times every day, with progressive paralysis of all her muscles and her nervous power, losing the power of protruding the tongue, or using her limbs, passing her feces and urine involuntarily; double vision; at times, dull and lethargic, and then, again, calm, and answering rationally.

November 4. She continued to grow worse; and her case was looked upon as desperate. Her condition was most deplorable, her convulsions not quite so frequent, but for several days has been furiously delirious, requiring the straight-jacket to keep her in bed. On the 6th, she began to show some improvement; the paroxysms were less frequent; and she lay more quiet, with closed eyes, face pale, pupils contracted, and insensible to light; no answers when spoken to; at times, revives, and appears to recognize those around her. From this date (6th), she became more comfortable every day; her convulsions ceased; at times, perfectly rational, and then again acts strangely, and asks foolish questions. She has recovered her sight, and uses her arms as well as ever, but does not stand or walk.

14*th*. For some days she has been able to set up the greater part of the day; can sew; her intellect is weak, but intelligence good; able to walk about; appetite good. She finally entirely recovered.

In fact, after a most desperate struggle against this awfully frightful disease, of which we unhappily know so little, and being dragged to the very threshold of death, with loss of mind and of every function, a mere breathing lump of clay, we watched, and with such pleasurable feelings as no one but the physician can appreciate, her slow resurrection to intelligence and physical health.

During the seventeen years I have been engaged in the study and practice of my profession, I have met with but one other case—and that one of puerperal convulsions in a lady seventeen years of age, the wife of an army officer—of equally appalling symptoms, and recovery following. This case

was vividly brought to my mind by two cases milder in character, which have occurred in my practice during last year, both of them young, unmarried women, about twenty-two years of age, who had suffered for months from amenorrhœa, and to whom I was called suddenly while in convulsions. I treated them afterwards; and, the catamenia being regularly and healthfully restored, they had no return of convulsions. I do not think it necessary to relate their histories in detail, as the above case (XI.) sufficiently illustrates this type. It is so difficult to determine, in many cases, where the functional disturbance ends, and the organic disease commences, what is sympathetic, and what is pathological, that our acumen is subjected to the keenest proof. We hesitate to do, and yet not to do, is perhaps to lose the only chance for our patient.

We find, at one time, the burning head, the injected bright eye, delirium, rapid, bounding pulse, frightful convulsions, and, an hour or two after, a clear and intelligent look, and calm mind, a natural pulse, and no complaint of pain. Who can explain these great and sudden changes? What is it that kindles up these demoniac fires in this brain-seat of the heavenly gift, the repository of that which makes us immortal beings, and responsible to the Deity for our good and evil actions? And what is the material, and what is the fluid of the brain and nerve tubes, which sends such awful electric-telegraph messages to the distant organs and apparatuses of the human cosmos? The mysteries of life and death are equally uncertain and inscrutable.

I have before me, among my records, the detailed notes of two very interesting cases, in which it was never satisfactorily ascertained whether there was actual phrenitis or not. They were treated, however, by what might be very well termed a "peace congress of remedies;" for I find depletion and antispasmodics prescribed on the same day—leeches outside the head, and valerian and hyoscyamus inside.

In one of these cases, that of a young, unmarried girl, of eighteen years of age, I find recorded, on one day, as follows: "Intellect much impaired; complaining of intense pain in back of the head, which is hot; pulse 100; vomiting; eyebrows contracted. To have her head shaved, blister applied to the nucha. Cal., gr. ij, q. 4 h." On the day following: "More intelligence; answers questions well; no contraction of brow; head no hotter than the rest of the body; feels dizzy." A little further along, I find her using gum fœtida, and hyoscyamus, and tr. guaiaci ammon., and iron, and the remedies usual for bringing on the catamenia.

The other case is that of a married woman, forty-nine years of age, whose catamenia ceased suddenly, giving rise to hysterical symptoms of mild character at first, but increasing in severity until the date when I find the following record: "This morning, at 4 o'clock, had tetanic spasm of both legs, with much pain, and afterwards *opisthotonos*. Paroxysms of *opisthotonos* occurred every *fifteen* minutes, accompanied by rigid contrac-

tion of the arms. She had *ten* such spasms in twelve hours; lies without consciousness; eyes glassy; elbows of both arms contracted, semiflexed, and cannot be straightened; both knees semiflexed, rigid, and ankles in same condition; thighs bent and stiff." From this she recovered under the use of musk and hyoscyamus; and her *pulse* is recorded as only *sixty-four*, and *soft* and *regular*. With its Protean changes, the case oscillated for many days. On one day, "no return of convulsions, pulse soft and regular, countenance more natural, and intellect perfect;" and then, again, "has had three or four violent convulsions; limbs bent, and mouth closed rigidly; back arched, pulse 100, respiration 50 to 60 per minute." And so the case lingered along for two months, when she was considered well enough to discharge; though it is not stated whether there was any return of the menses, a circumstance scarcely to be expected in one who had passed beyond the usual climacteric age. The notes of these two cases were taken by me under the dictation of the late Dr. Swett, attending physician of the New York Hospital, and are too minute and copious in detail for publication in their original form, but, in reality, present perfect histories of the disease.

The question very naturally arises how are such cases to be treated? I answer, candidly, I do not know; neither have I ever seen any one who did. Age seems not to have dependency, for the most violent forms of perverted nervous action occur (from before puberty until long after the child-bearing period) in the maiden and married woman, in all temperaments, among the rich and poor, in the milkmaid and the votary of fashion. But there are certain circumstances which render their attack most frequent. My experience teaches me that it is not so common among those brought up and living in luxury, nor among those who are born and live in poverty. It is rather in the transition state from one to the other, occurring near or during the parturient age. Thus the great majority of cases which have fallen under my observation were in young servant girls, who have lived to the age of eighteen or twenty, in the country, on plain food, and kept regular hours. They arrive after a long voyage, or from our interior towns, and hire out in families where their entire course of living is changed. They feed on badly-cooked articles, more meat than they are accustomed to, drink strong tea and coffee at irregular times, sleep in close and hot rooms, sit up late, and arise early, so as to obtain only from five to seven hours of disturbed and uneasy sleep, generally neglectful of their persons and bowels, and, in addition to all, subjected to such influences as excite the passions.

So, too, in the educated and refined, or those who have never known the necessity of denying themselves the gratification of every luxury and caprice, who have had one perpetual feast since they were weaned, aye, and some even from their birth, whose only occupation has been to help the fleeting hours of youth with music and the dance. In these, I say, the dark hour of adversity brings the sense of bitter disappointments, heart crushings, the

memory of joys gone never to return, neglect of the world, poverty, labour, and the future, naught but a weary journey to the life hereafter, when the spirit may throw off its dull clog.

For such, I say, who can minister? Could we be magicians as well as physicians, and bring back the fresh breezes of her mountain home, her simple habits, and innocent fancies to our "white slave," wealth, and luxury, and friends to the crushed, then would we have remedies at will; but at best we must administer such poor comfort as we can, soothe with anodynes and antispasmodics, quell the heart's fierce commotion, and coax the deranged functions again into gentle, steady gait, imitating the skilful angler who gently winds his reel, and again gives line, until the hooked trout is landed safely.

The treatment for amenorrhœa is familiar to every physician; and I cannot recommend any one remedy or any special mode as preferable to the other. We all have our favourite prescriptions, and have faith in them. Hot hip-baths, and the electro-galvanic current through the pelvic organs, have been for many years my principal reliance, and in very many cases have proved all sufficient. The ferruginous preparations are all important in giving the blood its vital properties, upon which depend the healthy performance of organic function, and healthy muscular tonicity. As the nerve tissue and fluid are formed from the blood, a healthy state of these is all necessary to the exercise of the rational and moral powers; for the brain, we are taught, is the organ of the intellectual and moral faculties. It must exert its powers of volition, or the muscles have no longer a guide; and paralysis or spasm results.

Careful hygienic management, looking to the removal of predisposing and exciting causes, is the most necessary object of our aim. Agreeable mental and physical exercise, pure air, and simple habits do more than all the medicines in the pharmacopœia.

I have involuntarily allowed my pen to occupy too much space, and here close.

NEW YORK, June 1, 1859. 724 Broadway.

ART. VI.—*Notices of the African Station.* By GEORGE CLYMER, M. D., Surgeon of the African Fleet. Extracted from two Communications to the Medical Bureau, during the cruise of the U. S. Ship Jamestown, in the years 1855, 1856, and 1857. Communicated by WM. WHELAN, M. D., Chief Bureau Med. and Surg., U. S. Navy.

U. S. FLAG-SHIP JAMESTOWN,
PHILADELPHIA, June 6, 1857.

SIR: Having completed her cruise, as the Flag-ship of the Squadron on the west coast of Africa, the Jamestown has returned to Philadelphia. * *

The Jamestown was commissioned on the 22d Feb., 1855, and sailed from Philadelphia on the same day for Norfolk, which she left on the 6th April, and finally, on the 9th June, sailed from Key West for her station on the coast of Africa. She reached the station, on the 8th July, at Madeira, and left it on the 1st May last at the Cape Verds, and will be this day, 6th June, put out of commission, after a cruise of two years, three months, and fourteen days.

During a stay of five weeks at Norfolk, 44 patients were sent, temporarily, to the hospital for treatment, 30 of whom were returned to the ship cured, the remaining 14 continuing under treatment at the hospital at the time of our sailing. Sixteen patients, invalided by medical survey, were sent home from Key West, and ten from the station. * * *

No death occurred on board of any of our own ship's company, whether from sickness or accident.

The average number of the ship's company during the cruise has been 221, the whole number of sick 1106, and the average daily number of sick $13\frac{249}{834}$.

Although during part of the cruise the number of sick was high, yet, in no other ship in which I have sailed, has the number of serious cases been so small. There was no epidemic sickness of any kind, no case of malignant fever or of dysentery, and no inflammatory disease of a high grade. Notwithstanding this general exemption from serious sickness, the tone of health has not been high; and we return from a cruise which has been too long, and which has dragged heavily away, with impaired vigour of body, and with, I fear, some predisposition to sickness arising from the debilitating influences of a station everywhere warm, and in most places hot, and from the depressing effects of its dull monotony and general uninterestingness, rarely, except in a few places, tempting a visit to the shore, whether for recreation or for curiosity, and dooming us to a shipboard life during nearly the whole cruise. * * *

I am, very respectfully, your obedient servant,

GEORGE CLYMER,
Surgeon of the Fleet.

WM. WHELAN, M. D.,
Chief of the Bureau of Medicine and Surgery,
Navy Department, Washington, D. C.

The following extract is from a communication to the Bureau, two months before leaving the station.

U. S. FLAG-SHIP JAMESTOWN,
PORTO PRAYA (CAPE VERDS), March 1, 1857.

SIR: On the evening of the 1st November last, the Jamestown got under way from Porto Praya, to make her second cruise down the coast, and sailed for Sierra Leone, which, at the distance of 710 miles, and in lat. 8° 30′ N., and long. 13° 18′ W., she reached on the evening of the 15th. On the fifth day from Porto Praya we ran out of the northeast trades into the

zone of light breezes, variables, and calms, which, stretching along the coast on the outer border of the trade-winds, we did not escape from till passing Cape Palmas in lat. 4° 22′ N., and long. 7° 44′ W., we fell into the southwest trades that swept up eastward along the coast of Guinea.

This funnel-shaped belt possesses a climate differing essentially from that which is fanned by the northeast or by the southwest trade-breezes. This difference in the climate we experienced this year as the last.

The rainy season on the coast, travelling with the sun, is reversed on the opposite sides of the line. On the north of the line, it stretches from May to October, with an intermediate dry period of a few weeks at midsummer, and is introduced and closed by tornadoes. These, occurring at the commencement and termination of the rains, conduce essentially to health, by driving, in a tumultuous sweep, from off the coast, the stagnant and sultry atmosphere loaded with miasmata from the reeking earth.

The regulation of the cruising, according to the season, has reference chiefly to the north of the line, where the rains and sickness are much more considerable than towards the southern part of the station; at which latter, vessels are little incommoded by either, at any season. The two accompanying *Reports* from the St. Louis show that, during her stay on the *north coast* in the latter part of the 3d quarter, she had seventeen cases of fever; while she had but two, and those relapses, during a stay of probably two months on the *south coast*, in the 4th quarter.

The months of December, January, and February, are the dryest and most pleasant on the north of the line, and those in which, so far as health and comfort are concerned, it is most desirable to perform a cruise along that part of the coast. Vessels, therefore, which are fitted out for the African squadron should, with a view to health and efficiency, reach the station by the beginning of November, so as to leave Porto Praya by the middle of that month on five months' cruise down the coast. They would, thereby, preserve the ships' companies from the wet and sickly season of the north coast, much more hazardous than that of the south, and probably also from the fevers and dysenteries which, though not confined to that season, are yet more prevalent in it than in the opposite one.

With whatever exemption, however, from malignant disease a ship's company, uninured to an intertropical climate, may return to Porto Praya from a lengthened cruise along the coast, its physical tone and strength will not fail to have become essentially impaired, so much so as to render a resort to an extra-tropical climate necessary, in order to recruit for a second cruise along the coast. This intermediate recruiting season of a few months may, therefore, with great benefit to the health, the vigour, and the spirits of all on board, be passed at the salubrious windward islands of the station. Without this invigorating process to build up a ship's company thus impaired, by the unavoidable debilitating influences of the climate, in physical tone, and moral and mental energy, a second voyage

down the coast, in immediate sequence of the former, could hardly fail to add to the existing debility, and thereby greatly to predispose to the endemic sickness of the various localities; from which, from the salutary measures now so judiciously pursued, our ships' companies are, happily, to a great extent exempted.

These conditions belong by nature, and therefore necessarily, to this station, embracing, as it does, a region as hot and insalubrious as almost any other in the world, and so unfriendly to the stranger, that more than nine-tenths of the negro emigrants from our southern States require a residence of two or three years before they can acquire a sufficient degree of acclimation to exempt them from occasional attacks of the endemic fever, and to enable them steadily to labor; whilst, to the white man, absolute acclimation, and entire exemption from the endemic fevers and dysenteries, are so nearly, if not quite, impossible, even after a residence of eighteen or twenty years, that I could not learn of a single instance in which they had been attained.

To contend against these adverse circumstances, and, in spite of them, to preserve the health and efficiency of the ships' companies, have, necessarily, ever been the dominant idea, the constant endeavour, in the administration of our squadrons on this station. This happy result has been effected to an almost unlooked-for degree by a strict observance of the judicious sanitary regulations of the department, and, in particular, by the avoidance of shore after sunset; by the employment of Kroomen to water and provision ship, and to perform boat and other outside duties of the ship; by the avoidance of unnecessarily fatiguing duties on shipboard; by careful exclusion of unripe fruit; by a free use of good water; by every attention to cleanliness, ventilation, and proper clothing; by limiting the cruises to eighteen months, or, at most, two years; and lastly, but of high importance, by no ship's performing two cruises down the coast, without an intermediate visit to the Canaries and Madeira to recruit.

To these comparatively cool and healthful islands, lying beyond the tropics, and fanned by perpetual trade-breezes from over the ocean, and at which alone, at least north of the line, on this station, the sailor can ever put foot on shore, our ships should repair on their return in the spring to Porto Praya from a cruise down the coast.

After passing there the summer months and the early part of the autumn, so insalubrious on the coast north of the line, which is our principal cruising ground, they would become reinvigorated to start afresh in the middle of November from Porto Praya on a second voyage down the coast; on their return from which to Porto Praya, in the following spring, they should sail for the United States, after an eighteen months' stay on the station; the relief arriving out in the fall.

The steady pursuance of this system, dictated by the character of the climate, has, in the exact degree in which it has been conformed to in our

successive squadrons, happily converted a station, once regarded as the grave of the white man, and formerly so fatal to the officers and sailors of the British navy, into a station exceeded by no other, visited by our national ships, in the small amount of its relative mortality and malignant sickness.

The Jamestown, as I have stated, left Porto Praya, for her second cruise upon the coast, on the 1st November, and visited, in succession, Sierra Leone, Monrovia, Cape Palmas, Elmina, Cape Coast, Accra, and Quitta, whence, in lat. 5° 55′ N., and long. 1° 14′ E., she returned to Monrovia; from which, after an eight days' stay to wood and water, she reached Porto Praya on the 25th January.

From our departure from Porto Praya till our return to it, after an absence of three months nearly, we encountered but half a dozen showers of rain. This year, as the last, we experienced a marked difference between the weather, and, indeed, the climate, on this side of Cape Palmas, and that to the east of it, along the coast of Guinea. In a few days out from Porto Praya we ran out of the northeast trades into the tract of calms, light breezes, and variables, which stretches along the coast as far to the southward and eastward as Cape Palmas, with the thermometer, at 8 A. M., at from 78° to 82°, with the atmosphere, for the most part, damp, sultry, and oppressive; varied, however, by an occasional dry harmattan from off the coast, with heavy dews, with skies starry overhead, but dusky and cloudy on the horizon, and with the coast at evening constantly overhung by heavy clouds, and illumined by gleams of lightning; whilst, eastward of Cape Palmas, along the coast of Guinea, we were fanned by a steady southwesterly trade-breeze, with the thermometer, at 8 A. M., 78° to 80°, for the most part; the sky unclouded in the day, and at night clear and starry in the zenith, but hazy, and as if filled with dust on the horizon; the atmosphere dry, and soft, and pleasant, with little or no dew at night, and not a cloud, or a gleam of lightning. In a word, from the time we lost the northeast trades, a few days out from Porto Praya, thence from Sierra Leone along the coast of Liberia to Cape Palmas, the weather was oppressively hot and sultry; whilst thence forward along the coast of Guinea, it was, on shipboard at least, quite pleasant.

Such exactly we found to be the character of the weather in these two localities during our cruise at the same season last year as this.

The cruise of last year was extended beyond Quitta as far eastward along the coast of Guinea as Wydah, in lat. 6° 19′ N., and long. 2° 05′ E., thence southward and eastward 420 miles across the Gulf of Guinea to Prince's Island, in lat. 1° 39′ N., and long. 7° 27′ E., and thence onward in the same direction 320 miles to St. Paul de Loando, in lat. 8° 48′ S., long. 13° 13′ East.

During all this latter portion of our last year's cruise, the weather continued, for the most part, especially on the south of the line, dry and

pleasant, such as we now found it along the coast of Guinea. I need, therefore, hardly say that the most disagreeable portion of our cruising ground on this station we have found to be that extending from Porto Praya to Sierra Leone, and thence along the coast to Cape Palmas; whilst beyond that, on the Guinea coast, and especially south of the Line, it was quite tolerable when we were there.

At Sierra Leone, which we reached, as I have said, from Porto Praya, on the 15th of November, we lay securely at anchor in the river, two or three miles from its mouth, and a quarter of a mile from the town, the only harbour, besides St. Paul de Loando, and Porto Grande in the island of St. Vincent, that we have been in on the whole station.

Freetown, the capital of this colony of recaptured slaves, contains a population of 16,000 negroes, and 150 whites, the colony itself numbering 46,000 inhabitants. The town is picturesquely situated on the southern bank of the river, at an elevation, in its lowest part, of 80 feet above its surface, and, in its highest, at two or three times that elevation. It rests on the foot and slope of a luxuriantly verdurous range of mountains, of eight or ten hundred feet in height, the most remarkable on the whole of this almost uniformly low and unvaried coast, and which stretches eastward several miles along the river from its mouth. With the exception of Madeira, it is the most picturesque and beautifully verdurous locality at which we had anchored on the station. It was represented to us by the English officers, and by the English and American residents, as entirely healthful at all seasons, both by day and night; the increased healthfulness, within a few years, being due to clearing and draining the soil, and to improved modes of living. The new-comers, who die, fall victims to intemperance and debauchery, rather than to the climate. It furnishes excellent water, and wood, and an abundant market, possessing advantages in these and in some other respects over every other place on the coast, and at the Cape Verd Islands.

After a stay of six days at Sierra Leone, we sailed on the 21st of November for Monrovia, which, at the distance of 190 miles in a direct line, but 300 by the way we came, and in lat. 6° 19′ N., long. 10° 48′ W., we reached on the 28th. The intermediate coast is remarkable for little but an almost unbroken line of mangrove, swamp, and jungle, with but a single elevation, that of Cape Mount, a conical hill of apparently 1000 feet in height, 42 miles from Monrovia. The necessary unhealthfulness of this line of marshy coast, and of the adjacent low island of Sherbro', midway between Sierra Leone and Monrovia, sufficiently accounts for the fate that befell the early emigrants from the United States at this latter unfortunate locality, a fate not unlike that which, in 1793, befell the wretched settlers in the island of Bulama, at the mouth of the Rio Grande, a few degrees farther to the north.

Monrovia, the capital of Liberia, is interesting as a missionary station,

and as a colony for the negro from the United States. It is planted on a promontory, called Cape Mesurado, washed on two sides by the Atlantic, and on a third by a creek, or inlet of the sea, called the Mesurado River; whilst interiorward stretches an interminable tract of impenetrable mangrove swamp. This, at all times steaming with miasmata under a burning sun, becomes, in the rainy season, a vast morass, covered with mud and ooze from the overflowings of the St. Paul's River and Stockton's Creek, which wind their sluggish way through this flat and miry region in the neighbourhood of the town. It is, in a higher degree than at any other period of the year, after the subsidence of the rains in the autumnal months, and at their commencement in the spring, when the soil is reeking under a torrid sun, and the atmosphere is stagnant, that it becomes loaded with paludal exhalations, which are a fruitful source of endemic sickness, and which, but for the frequent tornadoes at those seasons, might render all this portion of the coast uninhabitable to any except the native.

The character of the diseases here, as elsewhere on the coast, is nearly uniform, consisting, as they do, of fevers of the intermittent or remittent type, and of diarrhœas and dysenteries, often causing, by the frequency of their recurrence, chronic disorders of the viscera, and, in particular, enlargement of the liver and spleen.

I have stated that more than nine-tenths of the emigrants from the United States suffer from the endemic sickness. This is miscalled the acclimating, or seasoning fever, as an attack is an initiation, rather than a prevention; and the treatment, to be effective, must be to anticipate and prevent the attack by *the* remedy, sulphate of quinia.

Whatever acclimation may consist in; whether, as the name implies, it is anything more than a habituation of the system to the climate—that is, to the temperature, the dryness, or moisture, the miasmata, and, indeed, to the condition of the atmosphere in all respects—an attack of fever does not here appear to confer protection or immunity, but rather to predispose to and invite a recurrence or repetition. These attacks are apt to return, at intervals, during the first two or three years of the emigrant's sojourn on the coast, and, in a measure, to disqualify him for much labour in the meantime.

To provide, in a degree, against this drawback to the well-being of the emigrant, the Colonization Society sent from the United States, last fall, two "receptacle houses," capable each of comfortably accommodating one hundred emigrants. One of these has been put up at Monrovia, and the other at Cape Mount, 42 miles northward on the coast.

Here the emigrants who desire it are received on their arrival, and are lodged and fed for six months; after which, they are expected to provide for themselves. Those who are then able to labour, and some who are not, repair to the interior, some twenty or more miles up the St. Paul's River, to cultivate the land, of which the Government gives to each adult five

acres; whilst the poor, the indolent, and the sickly are apt, on coming out of the "receptacle," to loiter and lounge about the town, a tax upon its scanty resources and its charities.

A third "receptacle" sent from the United States, has, this winter, been put up some 60 or 70 miles from the coast, in an elevated and healthy locality. To this, in consequence of the sickliness of the coast, emigrants are to be transferred in boats up the St. Paul's River, immediately from the vessel in which they arrive, without putting foot on the coast. This, it is hoped, will save the health of the emigrants, and enable them, with comparatively little interruption from sickness, to proceed to support themselves by the cultivation of the soil.

I have said enough to convey my opinion that Liberia, with its enervating and sickly climate, was unfortunately selected as the locality on which to colonize the emigrant negro from the United States. It stretches some 400 miles through a low tract of variables and calms, which no trade-breeze ever refreshes, and which is exceeded by no other, and equalled by few on the coast, in its oppressive heat, its sultriness, and its unhealthfulness, constituting it little better, in its effects on health, than an overheated, ill-ventilated swamp. These are essential drawbacks to its prosperity.

We found, throughout the entire extent of the coast of Guinea, during our two cruises, a dryer, clearer, cooler, fresher, and more elastic atmosphere, perpetually fanned by the southwest trade-breeze; whilst, south of the equator, we found the climate in every respect more pleasant than in any locality on the coast north of it.

Though I regard the picture of Liberia's prosperity as having been too highly coloured in the United States, I do not regard the colony as destined either to go back, or to stand still. It receives annually 150 or 200 emigrants, with whatever of civilization and industry the race may have acquired amongst us; whilst the charities of our citizens, and the fostering care of the Colonization Society, are constantly contributing to its support.

From 70 to 80 vessels annually touch at Monrovia, and other Liberian ports, for camwood and palm oil chiefly; whilst sugar and coffee of excellent quality are susceptible, with capital, of being made staples of the country, and its commerce, with that of the entire coast, is yearly increasing. Commercial intercourse with Europe and America is daily imparting, not only to Liberia, but to the entire coast of Africa, a portion of their civilization; whilst missionary benevolence is, at this moment, conferring upon thirty thousand African children "the benefits of knowledge and the blessings of religion."

Progress, though slow, has thus far been steady under the combined influence of man's cupidity and his benevolence; and, under these two agencies, it will continue to advance, till the African, everywhere within their reach, shall attain a considerable degree of Christian civilization.

Liberia contains a population conjecturally estimated at 75,000 natives, and 10,000 emigrants from the United States, fifteen hundred of which latter class constitute, with a few missionary families, the city of Monrovia.

We left Monrovia on the 2d of December, after a stay of four days, and, coasting slowly along on a line of fifteen fathoms' sounding, and at six or eight miles from the shore, through light breezes, variables, and calms, with the atmosphere heavy, sultry, and oppressive, the thermometer at 78° to 82° at 8 A. M., the nights damp with dew, and with heavy clouds gathering over the coast at evening, and expending themselves, without wind, in heavy thunder showers before reaching the ship, we anchored at Cape Palmas, at the distance of 300 miles, on the 8th of December.

This coast, called, or miscalled, the Grain Coast, perhaps from the rice and millet which, with cassada, yams, sweet potatoes and groundnuts, constitute its chief vegetable products, and the chief food of its inhabitants, stretches to the southward and eastward in a straight line, with but few and slight indentations and projections, and presented to us, day after day, the dull, unvaried uniformity of a low, surf-beaten coast, with trees and brushwood growing to the water's edge, and projecting their verdurous tops above the horizon when the low beach became invisible; whilst, at many miles' distance from the coast, the land, at intervals, rose to an elevation of ten or twelve hundred feet.

This extended plain, rank with luxuriant vegetation, and deluged by periodical rains, must necessarily, under the heat of a vertical sun, teem, on the subsidence of the rains, with noxious miasmata; and, accordingly, we are told that the settlements along its margin are annually visited, during that stagnant and sultry season, by fevers.

The town of Cape Palmas, planted on the promontory, resembles Monrovia in situation and hygienic character, and is interesting to an American chiefly as one of the four missionary stations of the Maryland colony (of which Rocktown, Fishtown, and Cavalla are the three others, all within the compass of 20 miles), and where not only emigrant, but African children are receiving Christian education. The colony numbers, besides the natives, about a thousand emigrants.

Leaving Cape Palmas on the day after our arrival, we passed the Ivory Coast, and, on the 16th of December, anchored at Elmina on the Gold Coast, at the distance of 387 miles, and in lat. 5° 5′ N., and long. 1° 23′ W.

The southerly and southwesterly trades, which we struck after leaving Cape Palmas, sweep gently up the entire Gulf of Guinea, and confer upon the coast a climate in every respect more agreeable than that which we had just left.

Elmina, the principal Dutch station on the coast, consisting of a native town of stone and mud, with thatched roofs, and containing ten thousand inhabitants, is remarkable for its conspicuous white castle—the largest on the coast, and built by the Portuguese, for the traffic in gold dust and palm

oil—and, in a hygienic point of view, for the two classes of disease there endemic, viz., dysentery and the Guinea worm. Whilst it was represented to me, by the surgeon of the castle, to enjoy a nearly total exemption from fever, so destructive to the health of the unacclimated on the coast of Liberia, the exhalations from a marshy creek at the edge of the town exposed it to annual autumnal visitations of dysentery, which, though especially fatal to the Dutch officers and other Europeans who led irregular lives, did not wholly spare the natives. The natives, of both sexes, and particularly the women, who appeared especially to abound in the shaded streets of Elmina, were a well-formed and well-developed race.

But especially was I interested by the opportunity here presented of seeing specimens of those fortuitous and temporary inmates of the human body, peculiar to some warm climates, and which are popularly known by the name of Guinea worms.

The surgeon of the castle, who had always many cases of it on hand, showed me samples of this filiform parasite (the *filaria medinensis* of nosologists) in various stages of its progress, from the earliest perceptible irritation beneath the skin in a single point, to fluctuation and approaching ulceration at that point, with a distinctly felt development of the worm in its waving or serpentine direction in the subcutaneous cellular tissue, and finally to its semi-extraction at the ulcerated point. Its length he stated to average eighteen inches, but to range from one foot to three. These worms he represented to exist sometimes singly, sometimes in succession, and sometimes in numbers at a time in different stages of development in the same individual, and sometimes to appear a long time after leaving the coast of Guinea. Though they usually infest the lower extremities, I saw one, of eighteen inches, half extracted from the side of an individual who had two in the lower limbs. The extracted part looked and felt like a string of catgut; whilst the other could be distinctly traced by the fingers, like a whipcord, beneath the skin. The sinuous tract in which the worm was lodged was sensitive on pressure, particularly at its orifice; and traction caused some degree of pain. On this account, as well as to avoid the risks of a rupture of the worm, the traction is not carried beyond a quarter, or at most, a half of an inch at a time, and is renewed daily, or twice a day, until its complete extraction. The protruded portion dangled at the side; though it is usually recommended, as well to protect it from injury as to prevent retraction, to coil it around a quill of cotton, or other cylindrical substance, and to secure it near the aperture by adhesive plaster or other retentive means.

The Guinea worm, as I was assured, requires two or three months to run its course, during which time the patient, though partially disabled, may walk freely about. Whilst it lasts, the soldier at the castle is relieved from duty. An attack secures no exemption for the future, but may be followed by a series of invasions.

It has been observed that the officers, and others who are properly clad, are nearly, if not entirely exempt from Guinea worm, which attacks, in great numbers, the natives, whose limbs are exposed with little or no clothing, and who bathe in the stagnant waters near the town. May we not, then, refer the origin of these subcutaneous worms to the penetration (after the reputed manner of the pulex penetrans or Chigoe) of the animalcules, from the waters, in which they may be supposed to abound, through the skin into the cellular tissue, where, finding a nidus adapted to their nourishment and growth, they attain, at length, a development and activity which lead, through the irritation and inflammation which they create, to their expulsion from their human habitation as no longer to be tolerated inmates?

The opinion that they are due to the drinking of water charged with the entozoal germs, which, traversing the absorbents and the route of the circulation, come to be deposited beneath the skin, there to find a home, and to receive their development, is destitute of the support of physiology and analogy; though it does not want advocates, among whom is the surgeon of the castle at Elmina.

The idea of their spontaneous generation will hardly be maintained in these latter days.

After a stay of two days at Elmina, we proceeded, on the 18th of December, to Cape Coast, whose large white castle, built, like that of Elmina, on a projecting, surf-beaten rock, each at the extremity of an incurvation of the coast of seven miles in sweep, and each the structure of the Portuguese two centuries ago, was conspicuously visible by day, as the red light of its light-house was at night, from our anchorage at Elmina.

As this latter is the seat of the lieutenant governor of all the Dutch settlements on the coast, so is Cape Coast that of the governor of all the British stations, six in number, on the Gold Coast. The town, in the immediate rear of the castle, is constituted of small, thatch-roofed mud houses, tenanting seven or eight thousand well-developed natives, with a dozen white European-looking residences of merchants.

For a locality but five degrees from the equator, Cape Coast enjoys a happy degree of exemption from fever, dysentery, and, indeed, every malignant disease; though, in common with the rest of the Guinea coast, the natives are troubled with the dracunculus, or Guinea worm. Such is its healthfulness that the Rev. Mr. Freeman, who had been residing there as a Wesleyan missionary from England since 1837, pronounced it the healthiest station on the coast from Sierra Leone to the line, and that it would compare favourably in this respect even with Sierra Leone.

This happy exemption it doubtless owes in part to the refreshing southwest trades that perpetually sweep the coast of Guinea, and everywhere blow home, but chiefly to the absence of low and marshy soil, and of sluggish creeks or rivers, in its neighbourhood, and also to the range of high

hills immediately in the rear, and to the elevated and rolling country beyond them.

The trade here, as elsewhere on the gold coast, is chiefly in palm oil, selling formerly at 33 cents a gallon, and now at 43, and worth in the United States 75 cents. The export of this is yearly increasing, so much so that thirty to forty vessels trade on this coast from New York, Boston, and Salem, and a much larger number from England, carrying away, in addition to the palm oil, a little gold dust and ivory, which Americans pay for in rum and tobacco, and the English in cotton goods, muskets, and powder.

The palm-tree is not yet cultivated, but is native. Yearly increasing as is the demand for palm oil, it will doubtless in time be cultivated, and become the great staple of Western Africa.

The extent of our intercourse, as thus stated, with the coast of Africa, exhibits the importance to us of whatever relates to its degree of healthfulness and to its medical topography. The character of the trade shows something of the industrial condition of the people; whilst their intellectual and moral state, present and prospective, may be partly inferred from the existence, along an extent of 350 miles on this part of the coast, of 38 missionary stations, at one of which alone, that at Cape Coast, I witnessed 200 native children of the Fantee tribe receiving the blessings of a Christian education.

We left Cape Coast, after a stay of three days, on the 21st of December, and anchored, the next day, at Accra, at the distance of 70 miles, in 5° 32′ N. latitude, and 14 miles west of the meridian of Greenwich.

The gold coast had, in its entire extent thus far, been moderately high, in contrast with the low flat line of shore that had preceded it, and everywhere verdurous and woody, with hills, at intervals, far in the interior, of ten, twelve, or fifteen hundred feet in elevation.

The English and Dutch have each a castle or fortress, within a quarter of a mile of each other, at Accra; whilst a mile to the eastward is a third castle, Christianborg, which, with three others on the coast, was purchased, in 1850, from Denmark by the English.

The site of Accra, as viewed from the ship, is the prettiest we have seen on the coast since leaving Sierra Leone. The town is on a double slope, and consists of mud houses, with 5000 natives, and a few neat residences of merchants. It is reputed to be a healthful locality.

We were off the next morning for Quitta, 80 miles to the eastward, in lat. 5° 55′ N., and long. 1° 14′ E., the Ultima Thule of this our second voyage. The coast from Accra was low, with occasional clumps of cocoa and other trees, and a salt water lagoon stretching just back of it along its entire length from Accra eastward beyond Quitta. The latter is a small town of mud houses, with 2000 people, in a cocoanut grove near the beach;

and the small fort a mile to the east of it is one of the four purchased, seven years since, by England from the Danes.

We left Quitta, after a few hours' stay, on the 24th of December, to return to Monrovia, and thence to Porto Praya.

The same pleasant southerly and southwesterly trade-breezes that had fanned us steadily four, five, and six knots an hour up the Gulf of Guinea now fanned us as steadily back to the region of variables and calms, which we entered abruptly on the morning of the 1st of January, in about 7 degrees west longitude. We had thenceforward almost constant harmattan weather up to Monrovia, as well as during our eight days' stay there, and for several days afterwards on the way to Porto Praya.

During the prevalence of the harmattan, the wind was from the northward and eastward off the coast, generally cool and excessively dry, filling the atmosphere with a haze, or dust fog. The air was then oppressive, producing a heated feeling generally, dryness of the eyes, restlessness, and an uncomfortable sense of fulness of the head, with great indisposition to bodily and mental labor, and dulness of memory.

With scarcely a shower during a month since our coming to the station, these intertropical skies, though rarely very clouded, have been rarely very clear. The sun has shone with little of the splendor, and the stars with little of the twinkling brilliancy which they exhibit in a northern sky. A soft, vapory haze drawn up from the ocean, or a dusty mist brought by the harmattan winds from the deserts of Africa, has curtained out their excess of brightness. The sun has rarely gone down clear; and the stars have risen and set behind the dusky circle that rested, for several degrees, upon the horizon.

The cholera, which prevailed in the three windward of the Cape Verd Islands in August and September, carrying off ten or twelve thousand of the inhabitants, disappeared entirely by the middle of October; and, in the early part of November, they were declared in free communication with the rest of the group. Subsequently, however, it appeared in the island of St. Jago; three hundred fell victims to it. The last case occurred on the 11th of January; and on the 6th of February, this island also was declared free, and the whole group pronounced to be in health.

For three or four years, including the present, the crops of the Cape Verd Islands have been scanty, from insufficiency of rain, and many of the inhabitants have been reduced to much suffering.

The weather here (Porto Praya) since our return from the coast, on the 25th of January, has been cool and dry; the thermometer at 8 A. M. standing at 68°, with a very fresh northeast trade day and night. * *

I have ventured to submit the foregoing remarks on the medical topography of that part of the coast of Africa which the present cruise has presented to my observation. They are necessarily cursory and imperfect, and therefore liable to error; cursory from the shortness of our stay at

each locality, and imperfect from the fact that the coast offers few statistics, and little information that is full, accurate, and reliable. Climate and locality, their relation to health and disease, and their influence on the physical moral, and intellectual condition of man, are not there studied, or made matters of science. No meteorological registers are kept of the conditions of the atmosphere; and little investigation is made of the sanitary state of the country, of the hygienic condition of the inhabitants, of the character and degree of their diseases, and of their causes, their prevention, and their cure. All these important subjects that affect the habitability of a country, and, in a great degree, the well-being of its people, are matters, at best, of but individual opinion, the most fallible and unsatisfactory of all kinds of knowledge, if, indeed, it be worthy of the name.

To pronounce a climate agreeable or disagreeable, hot or cold, wet or dry, sickly or healthy, debilitating or invigorating, is to give little information, unless we know the mind of the informer, or the standard of his estimate. Without this, his opinion hardly enters into the domain of knowledge.

Nothing short of patient observation and investigation, with all the aids of science and of instruments, and of carefully prepared statistics, in relation to locality and climate, and to their influence on health, can furnish reliable information; for, although man claims to combine, in his own person, the thermometer, barometer, hygrometer, eudyometer, anemometer, and a complete register of health and sickness, the misfortune is that no two of these human standards exactly agree.

Failing, as does the coast of Africa, in all these essentials to knowledge, the subject of hygiene, as resulting from climate, locality, soil, and its productions, is here, like most other subjects, a matter, not of science, but of vague, conflicting, individual opinion and conjecture, from which, at best, but approximative inferences can be drawn.

It is these alone that I have ventured, in this communication, to offer on a portion of our cruising ground, hoping that, under the circumstances, they may not be unacceptable to the Bureau.

I would beg, in concluding this subject, to invite the attention of the Bureau to two points—one, the relative healthfulness of this station; the other, that of the north and south coast.

The health of the *squadron*, which compares favourably with that of squadrons elsewhere, is exhibited in the quarterly reports of sickness and mortality; but not the healthfulness of the *station*.

The chief sources of disease on any station we are happily nearly exempted from; I mean boat duty, and liberty to the men. The men go ashore at Madeira and Teneriffe, and rarely elsewhere. Hence comparatively little sickness results from shore-going on this station. Boat duty, watering, wooding, and provisioning ship, on all stations a fertile source of mortality, would, on this station, be frightfully so, were it not all performed

by the Kroomen, of whom each ship has a complement; this ship having twenty-nine, and who, from acclimation, are rarely sickened by it. When last at Monrovia, we watered ship from six miles up the river. The boats went up the river by night as well as by day, with perfect impunity to the Kroomen.

This would have been impossible to our seamen. It would have strewn the decks with sick and dying. And, even if performed by our sailors, only in the daytime, under a torrid sun, and in three times the number of days, the sickness would have been great, to say nothing of the mortality.

A report is on the files of the Bureau of the fearful results of a night on shore, as exemplified, ten years since, in the case of the crew of the frigate "United States" at this place; in consequence of which, many sickened, many died, and many were sent home. Our great aim here is necessarily to keep well; and the health we enjoy results from the pains we are at to resist the unhealthfulness of the station. We purchase health by precautions, privations, and restrictions.

I have said that the south coast is, in similar parallels, cooler, and, I have no doubt, healthier than the north.

Although the entire coast forms a lee and a safe anchorage throughout the year, there is no harbour through a sweep of twenty-six hundred miles from Sierra Leone, south to St. Paul de Loando in lat. 8° 48′ S., long. 13° 13′ E.

The town of Loando has a population of 1500 whites, chiefly Portuguese, and 8000 or 10,000 blacks, one-half, or more, of whom are slaves. It is in a comparatively cool and healthy locality, with an abundant market, excellent water, and an admirable harbour. These designate it as the proper place, and the only place on the station, for our depot, in case it should ever be removed from Porto Praya. It would there still be within reach of the mail, as the monthly mail steamer from England touches along the coast as far as the island of Fernando Po.

After a short rendezvous at Porto Praya, the squadron separated; the "St. Louis" for Cape Palmas on the 7th of February, the "Jamestown" for Bathurst on the 14th, and the "Dolphin" for a cruise on the coast three days afterwards.

In consequence of the freshness of the N. E. trades at this season, our run over to Bathurst, 400 miles from Porto Praya, was rough and disagreeable. We entered the Gambia on the 17th, and anchored a quarter of a mile from the town, which is in lat. 13° 30′ N., long 16° 41′ W. This important British settlement, of about forty years' date, stands on a low, flat, sandy islet, of four miles by one in extent, half overflowed at high tide, and six miles up the river, which, from ten miles wide at its mouth, there contracts to two miles, widening, however, to seven miles immediately above. It has a population of 4000 or 5000 negroes, with less than a hundred whites, chiefly English, and maintains a commerce with France,

England, and the United States, in groundnuts principally (of which the annual export is a million and a quarter of bushels), and some beeswax and ivory.

We were agreeably surprised by the neat, pretty, and inviting appearance of Bathurst. It is the best built town on the coast, more so than St. Paul de Loando, Monrovia, and Freetown at Sierra Leone, which three alone can compare with it. It consists of substantial, European-looking houses of stone and brick, many of them handsome and costly. The native huts are of cane, and are neat.

The marshes behind the town cause intermittent and remittent fevers in the autumn after the rains. They, as I was assured by the medical officers of the garrison, are limited to this season, rarely malignant, and generally readily curable by sulphate of quinia. During the rest of the year, the place is reputed healthy, and the weather in the winter cool and delightful.

The Gambia is navigable by large vessels, at least to Macarthy's Island, some 200 miles above Bathurst, and where also the English still maintain a garrison, thus exclusively commanding the trade of this valuable river.

Bathurst is indifferently supplied with wood, water, and provisions.

After a three days' stay, we were off on the 21st of February for Gorée, 90 miles up the coast, in lat. 14° 39′ 55″ N., long. 17° 24′ 40″ W., and, on the 23d, communicated with the place without anchoring. It is, after St. Louis on the Senegal, the chief French station on the coast, and the depot of their naval squadron. We found there a number of merchantmen, implying that it has a trade.

Gorée occupies a volcanic, rocky island, half a mile by a quarter in size, rising to 100 feet at its southern end, on which is planted a fortress to mount, when completed, 80 guns; whilst another of less size defends the northern extremity. It is in a large bay that sweeps round from Cape Manuel to Cape Naze, two miles and a half to the east of the former, and two miles south of the line of the coast, which defends it from the prevailing winds, and affords a secure anchorage during eight months of the year.

The town is of stone and brick, plastered, and pretty well built. It contains 4000 or 5000 blacks, of whom none are slaves, with a number of Europeans, mostly French.

Gorée has nothing of itself, not even water, which, of bad quality, and in insufficient quantity, is, with a scanty supply of provisions, obtained from the neighbouring coast. It has nominally a rainy season in July, August, and September, marked, as I was assured on the spot, by an occasional shower of a few hours during those months. The climate was represented to me as delightful throughout the year, and as entirely exempt from sickness. Indeed, as I saw myself, there was nothing to create sickness.

From Gorée, we filled away for Porto Grande, in the island of St. Vincent (Cape Verds), which we reached on the morning of the 26th, and from

which, after receiving our mail, we proceeded, the next afternoon, to Porto Praya, where, at the distance of 150 miles, we anchored on the evening of the 28th (yesterday), after an absence of two weeks.

I should here remark, what would have been appropriately stated on a preceding page, as illustrative of the unhealthfulness of the station, and of what, but for the present sanitary precautions, would doubtless continue to be the sickliness of the squadron, that, in the little cemetery at Porto Grande, inclosed by Commodore Perry, are the graves of two officers, and twelve sailors of the "Preble," who died at that place in December, 1844, and January, 1845, of African fever contracted in the river Jeba. How many more of the ill-fated ship's company fell victims to the same endemic the records of the Bureau will probably attest.

Whilst Porto Praya shall remain the head-quarters of the squadron, and the depot of the stores, Madeira and the Canary Islands must continue the retreat of the vessels from the rainy and sickly season of the coast. They are the only localities on the station, north of the Line, at which the ships' companies, debilitated by a lengthened cruise on the coast, can recover the tone and vigour to fit them to repeat it without risk to health. Porto Praya even, though comfortably cool and healthful in winter, is, in summer, oppressively hot; and to a ship's company that should then, and in the autumn, remain on shore at night, it would be little less fatally sickly than the coast.

It is, therefore, in no degree adapted as a resort at which to recruit a crew in the interval between two coast cruises. At that period, the season of rains and sickliness on the coast north of the line, Madeira and the Canary Islands are necessarily the retreats of our men-of-war; at which alone the climate is measurably invigorating, and the crews can have a run on shore.

Madeira owes to the equability of its temperature, and to the softness and purity of its atmosphere, the felicity of climate which has long caused it to be the resort of consumptives from Northern Europe, who, to the number of three or four hundred, flock thither yearly, from October to May, to cheat their own rude winters, and to gain a relief from their sufferings. Its southern slope is sheltered from the prevailing winds by the range of mountains that rise to four, five, and six thousand feet; and it enjoys (at Funchal) a medium temperature of 68° Fahr., with a daily range of from two to four degrees, and an annual range stated as rarely exceeding fourteen.

Although Madeira has its winter, the least pleasant season of the year, when the mountains are covered with snow, often overhung by heavy clouds, and sometimes deluged with rains, yet its southern slope, near the sea, is represented as even then a garden, usually smiling beneath sunny skies with the balmy softness of spring, its luxuriant verdure, and its genial atmosphere.

In the heats of summer, if heats they can be called, some of the citizens of Funchal retire to the cool table-lands, or serras, two or three thousand feet above the sea.

The climate of Funchal I have heard objected to as damp; and the hygrometer is said to have, in some localities, confirmed the objection. Though some of the nights were certainly not without dew, and the atmosphere at times was softened by a vapoury haze, yet, from what I saw myself, and heard from residents, dampness cannot be a characteristic of the climate, nor exist in such a degree as to impair its general healthfulness, or its suitability for consumptive invalids, of whom, despite the caprices of fancy, and the increasing number of resorts, it still continues, in as great a degree as ever, the favourite retreat.

The islanders are simple, civil, harmless, and industrious; and they are poor, less from indolence than from want of employment, and from an overpopulation, exceeding, by one-third, the products of the island to support. The failure of the vine for the last six years is a misfortune, less to the islanders generally than to the wine-growers in particular; the sales of the wines rather enriching the few than contributing to the support of the many. A culture that shall more equally diffuse the products of the soil, will advance the prosperity of the island, and the well-being of its inhabitants.

When we reached Madeira in the middle of May (1856), diarrhœa and dysentery, usual at that season, were prevailing in an unusual degree. These proved but the forerunners of cholera, a disease till then unknown in Madeira. The first case of cholera was admitted into the hospital at Funchal on the 8th July. By the 21st, about forty deaths had occurred from the disease in the city hospital. The mortality daily increased till, on the 31st July, it reached its maximum, one hundred and sixty-seven, in Funchal alone, a city whose population is variously stated at from twenty to thirty thousand. It thenceforward declined, after having numbered about two thousand victims in the town, and in the island (which contains the large population of from one hundred and twenty to one hundred and thirty thousand) about six thousand. The amount of destitution and wretchedness in Madeira, where, overstocked as it is with population, there are always thousands on the verge of starvation, offered a rich harvest for a pestilence like cholera; and accordingly it did its work of death effectually.

Of the Canary Islands, our experience has been confined to Teneriffe and Palmas, in the Island of Grand Canary, both remarkable for healthfulness and loveliness of climate, and at which a ship's company incurs no risk of sickness from remaining on shore at night. The anchorage at Palmas is exposed, and at times unsafe. At Santa Cruz, in Teneriffe, it is sheltered from the northeast trades by the island itself; though, being an

open roadstead, it is, like that at Funchal, exposed to occasional gales, during the autumn and winter, from the opposite quarter.

We found Santa Cruz warm in August and September, the thermometer on the gun deck standing, at 8 A. M., at 72° to 74° during our six weeks' stay. It is shut out from the refreshing northeast trade-breezes that perpetually fan the island, by the hills that inclose it in the rear. Immediately behind these, the table-land, twelve hundred feet in height, extends entirely across the island to Oratava on the northern side, and is a most picturesque and beautiful plain, cool, refreshing, invigorating, and blessed by as lovely a climate as the sun shines on; a delightful retreat for the seeker after health.

Teneriffe, with its volcanic soil, is rich, but only partially cultivated. It is dry from a sad deficiency of trees. The death of the vine, contemporaneously with that at Madeira, has been amply compensated by the successful culture of the cochineal, and is not regretted.

These fortunate islands, lying in the sweep of the northeast trades, enjoy perpetually an equable and delightful climate. As at Madeira, the annual range of the thermometer is very small. There is no sickly season, and health reigns throughout the year.

The selection of Porto Praya as the head-quarters of the squadron confers on the Cape Verd Islands an importance to us they could not otherwise possess. This archipelago of a dozen islands and two islets, disposed in a northern and a southern group, is comprised within the parallels of 14° 48′, and 17° 12′ N. lat., and the meridians of 22° 42′ 34″, and 25° 23′ 10″ W. long., and lies over against Cape Verd, the westernmost projection of Africa, at the distance of four hundred miles, a cape from which it derives a name to which its striking destitution of verdure would otherwise little entitle it. It is little else than a cluster of volcanic mountains jutting from the ocean, dark, rugged, confused, broken by deep ravines, extensive valleys, and table-lands, with peaks of four, six, and eight thousand feet in height, of which that of Fogo is occasionally active, and projects nine thousand one hundred and fifty-four feet above the water, an altitude short of that of Teneriffe by only three thousand and eighteen feet.

The shores of the islands, which are everywhere clean, bold, and abrupt, are often steep, rocky, stratified cliffs, with a very narrow line of soundings around them, proving the great depth of their bases below the surface of the water.

They are remarkable for the fewness of their harbours, which nature has partially compensated for by constituting the entire southwestern coasts, in all their indentations, a sheltered anchorage during nine months in the year.

The Cape Verd Islands lie in the sweep of the northeast trades, which in the spring are particularly fresh, and which are rarely interrupted, except

in July, August, and September, when occasional southwest gales, with heavy rains, beat on that side of the islands, driving heavy seas upon the coast, and obliging ships to put to sea. The only sheltered harbour in the group, throughout the year, is Porto Grande, in the Island of St. Vincent. It is a capacious bay, capable of harbouring a large fleet, and is protected from the winds by the high hills that surround it, and from the sea, at its entrance, by the opposite Island of St. Antonio. The great want, however, of resources of the Island of St. Vincent, almost entirely destitute as it is of animal and vegetable products and of water, is a bar to its becoming the head-quarters of the squadron, aside from the disadvantage of its being two days' sail farther from the coast than Porto Praya.

Porto Praya ranks second as a harbour, though first in all other respects. It is a fine bay, over a mile in depth, and a mile and a half across the entrance, which opens to the southward, and exposes it to the gales from that quarter in July, August, and September, though sheltered at all other times from the prevailing northeast winds, with anchorage for a dozen ships of the line. Though the weather-shore of the harbour consists of high, perpendicular cliffs, its situation at only six miles to the southwest of the low southeastern point of the island exposes it, in a much greater degree than if it had been still farther to the west, to the freshness of the northeast trades, and to the reflux swell of the sea. A surf-beaten sand beach at the head of the bay is the place of landing, which we effect on the backs of Kroomen.

The town of Praya, the present capital of the archipelago, and the present residence of the Governor-General, occupies a table-land of rock at the head of the bay, half a mile by a quarter in extent, one hundred and fifty feet above the sea, with cliffs nearly perpendicular, and surrounded, except at the southern extremity, which is washed by the sea, by a deep valley, which, during the rains, is filled with water, and, after their subsidence in October, sends up the miasmata which cause the annual endemic fevers. It contains some three or four thousand persons, chiefly negroes of mixed blood, and a few Portuguese. Except in the long seasons of drought, which from time to time visit these islands, the supply of every produce which an inexhaustibly rich volcanic soil can yield, is abundant. The fertile valleys and table-lands would, with sufficient rains and proper cultivation, fully satisfy the wants of the islanders, who number, as conjecturally estimated, from one hundred to one hundred and twenty thousand. The various intertropical fruits, especially the orange, of unsurpassed excellence, vegetables, poultry, meats, are there yielded in abundance, in addition to the fine fish that frequent the shores of all these islands, as they do those of the Canary and Madeira archipelagoes. For the last six years, including the present, there has been little rain, a phenomenon of occasional occurrence, and of difficult explanation in view of the fact that the periodical rains never fail on the coast of Senegambia in similar parallels. The

islands, nearly stripped of trees, and with little verdure now even in their rich and extensive valleys and plateaus, look burnt up, dreary, and desolate, yielding but a scanty supply of even their spontaneous productions. Of consequence, there is little to export. The Orchilla weed, valuable for its dye, once a staple and a source of revenue, has ceased to be collected; and the chief, if not sole, exports at present are goat-skins, pulga-nuts which yield a valuable oil, and salt, which is largely prepared on three or four of the islands. Water itself is now scarce, even on this the largest island of the group, and the best provided in nearly every respect. A reservoir on the beach, at the head of Porto Praya, supplies our squadron, and, though low at times, has thus far, I believe, never entirely failed. Its water is at present not very good.

Porto Praya, it would thus appear, is in few respects fitted to be the head-quarters of the squadron. The supply of provisions and of water is rarely sufficient; and wood is scarce. During the winter, the weather is dry and agreeably cool, and would be pleasant but for the fatiguing freshness of the perpetual N. E. trades, and the unceasing reflux roll of the ocean which they send in. For eight months in the year, it may be visited with little risk from southerly gales, and with little inconvenience from rains and sickliness. During the remaining four months of July, August, September, and October, it would be desirable to avoid it, and to be south of the Line, or at the windward archipelagoes of Madeira and the Canaries.

The only other place on the station that could be thought of as a depot is the Portuguese establishment of St. Paul de Loando in 8° 48′ south lat. It has, as I have stated, a population of 8000 or 10,000 blacks, and 1500 whites, and is well supplied with wood, provisions, and water. It is little incommoded by the diluvial rains that, for three, four, or five months, vex the entire northern coast from the Line to the 12th or 15th degree. It is reputed not to be sickly, with a climate at no time oppressively hot, and for the most part agreeable. A few degrees south of it, the locality of Elephant's Bay, in lat. 13° 14′, and of Little Fish Bay, in lat. 15° 13′, are visited by the vessels of our squadrons, and are represented by them to be healthful and invigorating, to be beyond the limits of the African fever, and that there crews may recruit their health and strength, and recreate by a run on shore. These are the advantages which Loanda possesses over Porto Praya as a depot for the squadron; aside from the fact that it is immediately on our cruising ground. The establishment of Porto Praya as the rendezvous creates the necessity to resort to the Canaries and Madeira during the summer to recruit strength after a cruise down the coast, a necessity which would not exist to the same degree were the depot at Loando.

The islands are of little commercial importance to us, and constitute but a small part, if any, of the object for maintaining a force on the station,

which is, therefore, made to include them, scarcely more than incidentally, and chiefly as a depot, and as a recruiting ground. On each of these accounts, they must necessarily be resorted to; and, from their remoteness from even the northern limit of the cruising ground, which rarely extends beyond Monrovia, this necessary resort to them is always attended by a lengthened withdrawal of the ships from the station proper. From the want of steamers, the only kind of vessels of much efficiency in these regions of light breezes, variables, and calms, even a single month's recruiting at Madeira or the Canaries, conjoined with the necessary resort to the Cape Verds for provisions in the passage each way, entails a withdrawal of the sailing ship, from her cruising ground, for a third of the year. These islands are not embraced in the British station, though more extended, coastwise, than our own; and they are rarely touched at by any of the vessels of the British squadron, except in their passage to and from England; although eighteen of them, out of the twenty-one on the station, are steamers. Our little squadron, therefore, works to disadvantage, both from the want of steamers, and from the distance from the cruising ground of both the provisioning and recruiting stations, a disadvantage which would be much diminished by changing the head-quarters of the squadron from Porto Praya to St. Paul de Loando, to say nothing of the benefit likely to result therefrom to the health of the squadron.

The climate of the station necessarily varies with latitude, with elevation and other topographical circumstances, and, in an especial degree, with position in or out of the perennial winds. Insular climates, moreover, are, for well understood reasons, more equable than continental. The islands of this station, in particular, enjoy a more uniform climate than the coast, not only for reasons common to all islands at a distance from the main, but also from their lying in trade-winds, which give them a trade-wind climate, exempt from the frequent storms and other atmospheric disturbances that harass the zone of calms and variable winds, which stretches along the coast, and runs with the equator between the N. E. and S. E. trades. They are exempt, besides, from the tornadoes, of which every cruiser on the coast hears so much. The south coast also feels little of these hurricanes, which are there rare, and do not exceed the violence of an ordinary storm. As we advance north from the Line, they are felt along the whole coast of Guinea, occasionally, but not in their greatest violence. It is on that part of the coast which extends from Cape Palmas to Cape Verga, between the 4th and 10th parallels that they occur most frequently, and in full force. These fearful storms rise over the land at the N. E. with frequent lightning. They thence move to the E., and at the S. E. are in full blast, when, or soon after which, they discharge themselves in torrents of rain, and, after an hour or two's duration, die away in the south and southwest. The tornadoes, as I have said, usher in and terminate the rainy season, which, moving with the sun, commences after it has passed the zenith of a

place in its travel north, and ends after it has again passed it on the return to the equator. At those vernal and autumnal periods, or nodes between the rainy season and the dry, before the diluvial rains have fully set in and flooded the soil, and after their termination, when it is still reeking under a torrid sun, the stagnant atmosphere is loaded with moisture freighted with miasmata, the source of the endemic fever. Then it is that Providence kindly sends the tornadoes that sweep the malaria from off the face of the land. They always blow seaward, the entire coast constituting a lee.

Nor are the islands, equally with the coast, exposed to the influence of the harmattans. These sirocco winds, that are felt at times on all the northern coast, blow over the Sahara Desert, giving to it all their moisture, and receiving a portion of its impalpable sand. Their direction is easterly and northeasterly. They fill the atmosphere with a dry haze, or dust fog, which is densest on the coast of Senegambia nearest to the desert, and rarest on the Guinea coast, from the loss of part of the dust in the vast intermediate region over which they have blown. They usually commence in December, soon after the dry season has set in, and occur, at intervals, and of a few days' duration, through January and February. They are remarkable for their parching dryness, and for the general feeling of malaise they occasion, though not otherwise noxious to health. They extend at times to Madeira, where they are known under the name of "l' esté," or the east wind, of which the consumptive invalid is said to complain less than persons in health; and they have been known even to be accompanied by a flight of locusts, which has covered the island and all the surrounding sea. In November last, off the isles of Los, the "Jamestown's" decks were strewed with grasshoppers brought by a harmattan. I have felt these African winds at Porto Praya, which is four hundred miles from the coast; though they usually extend but a few leagues.

In regard to the dust fogs, said to occur in the spring and autumn in the region of the Cape Verds, we have seen but one; though the atmosphere is there often filled with a dry, dusty haze. The red-dust fog that we saw, we passed through on our return from St. Paul de Loanda to Porto Praya in February, 1856. It was in the belt of equatorial calms, which we entered from the southeast trades on the 1st of February, in 2° N. lat., and between 12° and 13° W. long. We were immersed in the dust fog six days, entering it abruptly on the night of the 9th of February, in lat. 7° 30′ N., and long. 15° W., and emerging from it, and at the same time from the zone of equatorial calms, into the N. E. trades, on the 15th, in lat. 9° N., and long. 19° W. With these, we beat to Porto Praya, in lat. 14 54′ N., and long. 23° 30′ W., crossing a southwest current of nearly a mile an hour, arriving on the 22d of February. The red dust settled thickly on the sails, rigging, spars, and decks, from which it was easily collected. It was an impalpable powder, of a brick-dust or cinnamon

colour. The atmosphere was so dusky that we could not have seen a ship, at mid-day, beyond a quarter of a mile.

The nature and source of these red-dust fogs are matters of speculation; whether they are of the animal, the vegetable, or the mineral kingdom; and whether they are wafted from the plains of Africa by the N. E. trades, or transported from those of South America by the return atmospheric currents in the upper strata, against the direction of the surface trades, and precipitated in the belt of calms. This curious subject is ingeniously speculated on by Mr. Maury in his valuable "Sailing Directions," his reasons inclining to the organic nature, and the South American origin of the dust fogs.

We experience great difficulty in sending home the invalids. We have some who have been waiting an opportunity for six months, and others for a shorter time. A vessel from Madeira or the Canaries to the United States is of rare occurrence; and only occasionally there chances to be one from the Cape Verds.

We have completed our cruising on the station, and now only await the day of our departure for home. It affords me pleasure to assure you of the continued excellent health and efficiency of the squadron. Not only has no malignant disease occurred among any of the ships' companies, but the sick lists have been composed of ordinary diseases, not peculiar to the station, moderate in degree, and of little variety. This continued health, and entire exemption from the fatal endemic diseases of the coast, and of the Cape Verd Islands, are, I may here repeat, doubtless due to the strict observance of the wise sanitary regulations of the department, enjoining, as they do, the avoidance of unnecessary exposure to the sun, and of the shore after sunset; to the employment of Kroomen in watering, wooding, and provisioning ship, and in all other boat duty; to cleanliness, ventilation, and dryness of the ship in all its parts, especially excluding water from the hold, and avoiding all unnecessary wetting of the decks; to the absolute exclusion of bad fruits and water, and the unrestricted use of good; and, in a word, to the care constantly exercised to secure, by every possible means, the ships' companies from exposure to the causes of sickness, and to preserve them in a state of health—a result which, on this station, has not failed to be obtained in the exact degree in which the well understood means of securing it have been observed, while the neglect of any of these measures is sure to entail sickness and death.

I am, very respectfully, your obedient servant,

GEORGE CLYMER,
Surgeon of the Fleet.

WM. WHELAN, M. D.,
Chief of the Bureau of Medicine and Surgery,
Navy Department, Washington, D. C.

ART. VII.—*Two Cases of "Throat Deafness," with some Observations on the same, and a New Method of Application for its Relief.* By FREDERIC D. LENTE, M. D., of Cold Spring, N. Y.

CASE I. Miss Emma O., aged 18, a teacher in one of the "ward schools" of the city of New York, applied to me, June 26th, 1859, complaining of deafness, which has been gradually increasing for some months, until it has almost incapacitated her from pursuing her occupation. She states that, for some weeks past, while chewing at her meals, the deafness is complete, so that although she sees that a person at table is addressing her, she hears no sound whatever. She has also considerable irritation about the larynx, and an accumulation of adhesive mucus there in the morning; also a feeling of "weakness" at the top of the *sternum*. She considers her general health good, although she has rather a delicate appearance. Appetite and digestion good; bowels and catamenia regular. No evidence of disease of chest upon physical exploration. The *meatus auditorius externus* and *membrana tympani* have a normal aspect; the mucous membrane of the fauces also has a tolerably healthy appearance, and there is no hypertrophy of the tonsils. The ticking of a watch is heard at the distance of four inches from the left ear, and about half an inch from the right with some difficulty. Hears no noises in the ears, and has had no pain there. Asked the advice of a professor in one of the medical colleges of the city, who applied nitrate of silver to the throat with a probang, with some relief to the throat symptoms.

Treatment.—Not to go into a tedious detail of the daily treatment, it is sufficient to state that a solution of the nitrate of silver was applied to the throat four times at an interval of three or four days, with relief to the symptoms referable to that part. She was directed to keep up a moderate pustulation over the upper part of the sternum and under the clavicles, with croton oil liniment; and a solution of the iodide of zinc in equal parts of glycerine and water was applied directly to the orifice of the Eustachian tube by the following method: The nozzle of a small glass syringe was inserted into the open end of a piece of elastic catheter (No. 4 or 5), and secured by a wrapping of thread. A small portion, some twenty or thirty drops, having been drawn into the syringe, the catheter was introduced into the nostril, with the lower *fenestra* looking outwards, and pushed backward to the posterior wall of the pharynx, about three inches and a quarter; the *fenestra* being then just opposite the opening of the Eustachian tube,[1] and upon using the injection with some force, the fluid was, of course,

[1] An English (Hutchinson's) catheter is preferable, as this has only one *fenestra* and this in a favourable position for our purpose.

thrown directly upon it. A smarting sensation extending to some little distance down the throat, and forwards towards the nose, was felt for an hour or two, but was not complained of. The strength of the solution was five grains to the ounce, increased to ten or more as the parts became habituated to its use. The application was made daily (on alternate days to either side), until the 14th July, with an interruption for four or five days during the patient's temporary absence in the city; after which it was continued every other day for ten days longer, with the following result. At the expiration of a week, there was very sensible improvement in the hearing of the left ear, and at the end of another week, the hearing on this side was normal, and the application to it discontinued. The improvement of the right ear was more gradual, but still progressive, and within four weeks the hearing on this side was also perfectly restored, and as good during mastication as at any other time. Patient was also kept on the use of Garnier and Lamoureux's *drageés* of the citrate of iron, six grains per day, with considerable improvement of her general health and strength. She is now, several weeks after the discontinuance of the treatment, apparently well in every respect.

CASE II. Mrs. L., aged 40, general health good, applied to me August 12th, 1859. Says that, for some weeks past, she has had a "fulness and pain" in the region of the lachrymal sac and left nasal passage, also an increasing deafness in the left ear. She says the ear frequently, during the day, appears to be "stopped up," and it is at the same time the seat of a buzzing noise, but that, on *bowing the head forward* for a short time, the obstruction seems to be temporarily removed, and the buzzing ceases. The *meatus auditorius* and *membrana tympani*, as well as the fauces and tonsils, appear healthy.

Treatment.—Applied a leech to the Schneiderian membrane on the left side, which was followed by a considerable flow of blood, and relieved the nasal symptoms considerably; but the deafness remained the same. Used the injection of the *iodide of zinc*, as in the last case, with considerable relief to the deafness after the first application, and with entire relief after the third; the application having been made every other day.

The two cases just described will sufficiently indicate the nature of the deafness which it is proposed to treat by a simple application to the orifice of the Eustachian tube, and the manner of making this application. The particular kind of injection is perhaps not a matter of much importance. I was first induced to use the *iodide of zinc* from the fact that it has been sometimes found efficacious in making a favourable impression on chronic engorgement and hypertrophy of the tonsils, a form of disease usually very intractable under all other medical treatment, and because it is much

less disagreeable and persistent to the taste than *nitrate of silver*, and does not stain the clothes or the skin so indelibly.

It was at one time extremely fashionable among aurists to attack the Eustachian tube, and through it, the *cavitas tympani*, for the cure of various forms of deafness, by means of sounds, catheters, medicated air douches, and injections; but these applications were eventually found to be more injurious than useful in a majority of cases, and they have been rapidly falling into disrepute. It has not, however, been customary to make the application simply to the *orifice* of the tube, at least in an efficient manner, while it is here that "throat deafness," and deafness arising from disease of the *cavitas tympani*, without doubt, as a general rule, have their origin. Disease of the Eustachian tube, at any other part than near its faucial opening, is one of the rarest affections of the ear, as shown by actual statistics (*see* Toynbee and Wilde), therefore, it can seldom be requisite, even if the attempt were devoid of danger, to make applications throughout its whole extent, especially as the effect of a stimulant on a mucous canal extends considerably farther than the point of application. When, on the other hand, we call to mind the numerous affections of the fauces which prevail in almost all climates, but especially in ours, both from common and specific causes, but more particularly from the phthisical and strumous diathesis, and from constant exposure to the ever varying temperature and hygrometrical state of the atmosphere, we cannot wonder that the Eustachian tube, always influenced by these affections, should be frequently attacked with chronic disease. Both Toynbee and Wilde, our best authorities, agree that chronic disease of the cavity of the tympanum is by far the most common cause of deafness. And it is not at all improbable that this disease (chronic inflammation generally) is the result of the extension of repeated attacks of inflammation of the faucial extremity of the Eustachian tube; which, if recognized, and efficiently treated in time, might perhaps generally be arrested. That most intractable form of inflammation of the ear which results from *scarlatina*, no doubt, as Mr. Wilde believes, is the result of an extension of disease from the fauces along the tube, and this in all probability might be prevented by a timely and persevering application of appropriate remedies to the original seat of the disease, the extremity of the tube. So, after *measles* also, especially in strumous subjects, we should always be on the watch for this difficulty.

Even in the time of Hippocrates, as Mr. Wilde informs us, it was remarked that "quinsy" was followed by closure of the Eustachian tube, and consequent deafness. But, unfortunately this closure was then, as it is most generally now, regarded as the result of the enlargement of the tonsil, and remedies consequently addressed to this part. Mr. Wilde most strenuously contends against considering deafness as dependent on tonsillitic enlargement, and probably with good reason, for it does seem almost im-

possible that an ordinary hypertrophy of the tonsil, however great, should extend so far upward and backward as to encroach upon the orifice of the tube. But in cases of tonsillitis, the inflammation, of course, extends to the adjacent parts, for instance, to the Eustachian tube, which is near by, and eventually tends just as effectually to produce its closure, more or less complete, by inflammatory exudation, as if the enlarged tonsil itself pressed upon it. This may satisfactorily explain the discrepancy of opinion among aurists as to the cause of "throat deafness." But the ablation of the tonsil has not unfrequently, according to the statements of reliable aurists, produced an almost immediately beneficial effect on the deafness. And why not? The hypertrophied body, three or four times it normal size, has kept up by its irritation a state of chronic inflammation of the adjacent mucous membrane, and its removal is not unnaturally followed by a favourable change in the condition of this membrane.

The uncertainty of all treatment addressed to chronic disease of the ear, and especially to disease of the Eustachian tube and cavity of the tympanum, the danger attending most of the methods of treatment recommended, even in skilful hands, must be my excuse for giving such prominence to the two cases detailed in this paper, cases possessing, *per se*, so little novelty or interest.

COLD SPRING, August 24th, 1859.

ART. VIII.—*Arsenic in Menorrhagia, Leucorrhœa, &c.* By ARTHUR P. BURNS, M. D., Ellicott's Mills, Md.

I DESIRE to impress upon the profession my conviction of the great powers of arsenic in menorrhagia, leucorrhœa, hemorrhage in threatened abortion and after delivery, and excessive lochial discharge. I have been long in the habit of using it in those affections, and it has never failed in my hands to relieve the most obstinate cases. My usual plan of treatment has been, in menorrhagia, if called to the patient during the hemorrhage, to give immediately ten to twenty drops of Fowler's solution, according to the severity of the case, and repeat it in doses of ten drops every fifteen to twenty minutes, until the hemorrhage is checked. I have never had occasion to push it to a dangerous amount. Care must be exercised in its administration, as it will entirely suspend the menstrual secretion. I then give five to ten drops, three times a day during the menstrual period, and in the interval, three to five drops, three times a day. In leucorrhœa, I give three to five drops of Fowler's solution, three times a day, and steadily persevere in the use of it until a cure is effected; sometimes I use injections,

counter-irritation to the sacrum by blisters, &c. In either affection, if there is debility, I use tinct. cinchona comp. ℥iij; tinct. cantharis ℥ij. M. Dose, a teaspoonful, three times a day; sometimes add spts. æther nit. and tinct. opii camph.

To show the great power and peculiar efficacy of the remedy, I give a report of two very obstinate and long-standing cases that came under my care. I could cite numerous cases, but think these will suffice:—

CASE I. An unmarried lady, aged 23; anæmic; menstruated at 15. Excessive menorrhagia and uterine leucorrhœa from the beginning, which continued in spite of all the remedies used by various physicians, uninterruptedly, until she came under my care. She was a great sufferer from spinal irritation (sympathetic), neuralgia, and intense agony during menstruation. The menstrual periods were very irregular, varying from one to three weeks, the slightest exciting cause being sufficient to establish the flow, which had continued at times for weeks without intermission. I put her upon five drops of Fowler's solution, three times a day, increased to ten drops ter die during the menstrual period, vaginal injections, blisters to the sacrum, and the tonic mixture above; a steady perseverance in the remedies for four months effected a cure. She now has no menorrhagia, no leucorrhœa, no spinal irritation, and but rarely an attack of neuralgia, which was before a constant attendant. This case would not bear iron in any form.

CASE II. An unmarried lady, aged 25; plethoric; menstruated at 14. Menorrhagia and excessive vaginal leucorrhœa from the beginning; the menstrual periods were irregular, and at one time the flow continued uninterruptedly for eight months, when the case came under my care. She menstruated irregularly every second or third week, with exhausting leucorrhœa in the intervals, causing an intolerable feeling of dragging down, and pain in the back upon the slightest exertion. Ordered ten drops of Fowler's solution, three times a day, during the menstrual period, and five drops three time a day, in the interval, with cold ablutions, night and morning, to the sacrum, pubes, &c.; the treatment was continued for three months. She now menstruates every fourth week, and has no leucorrhœa.

I may state here that I have persevered for months, continuously, in the use of the remedy without any unpleasant effects. I know of no remedy so effective and so prompt in arresting hemorrhage in threatened abortion; it seems to suspend at once the contractions as well as the hemorrhage. I usually give twenty drops for the first dose, and ten drops every fifteen to twenty minutes thereafter, until the hemorrhage is checked. In hemorrhage after delivery, it is equally efficacious, used in the same manner and doses. In excessive or long-continued lochial discharge, in doses of five to ten drops ter die, in conjunction with the tonic mixture, it acts promptly and efficaciously. I have had cases that had resisted other treatment to yield speedily to this. In one case, in which the discharge continued for weeks after the usual time, with occasional hemorrhages, resisting other treatment, it yielded promptly to ten drops ter die, and the tonic mixture. Its *modus operandi*

I am unacquainted with. That it does not act by inducing uterine contractions appears certain, as it will suspend them in threatened abortion, and, I believe, in large doses, would suspend them at the full period of gestation. I believe it to be a general hemostatic of great power, though I have never had a fair opportunity of testing its powers, and equally as efficacious in hæmoptysis, &c., as it is in menorrhagia.

Art. IX.—*Aneurism of the Right Carotid and Subclavian Arteries. Ligation of the Arteria Innominata.* By E. S. Cooper, M. D., Prof. of Anatomy and Surgery in the Medical Department of the University of the Pacific, San Francisco.

Aneurisms are frequently found in different parts of the body at the same time, but they seldom occur simultaneously in two arterial trunks so large as those of the subclavian and carotid, and so close together as to coalesce.

The walls of the two aneurisms in this case were united by adhesions of a firm character, and the pulsation produced was the same as that of one large-sized aneurismal tumour.

From the extent of the surface, which was found to be the seat of pulsation, I was led from the first to think the subclavian was implicated in the aneurism, though the history of the case rendered it almost conclusive, that the primitive carotid had been originally the seat of the disease.

It was this complication, as I supposed, that rendered the operation on the distal side of the tumour impracticable. Having decided upon ligating the innominata, and having the patient conducted through a preparatory course of treatment for a few days, the operation of ligating the innominata was performed.

My assistants were Drs. B. A. Sheldon, Grover, Finnigan, and Professors R. B. Cole and J. Rowell.

Operation.—The patient being placed upon his back, with the head and shoulders elevated, I made an incision, four inches long, in a line parallel, and half an inch above the upper margin of the clavicle, commencing internal to the sterno-clavicular articulation, and terminating near the anterior margin of the trapezius muscle. A transverse incision was now made, commencing a little to the inner side of the centre of the first, and extending upwards, external to the sterno-cleido-mastoideus muscle, terminated two and a half inches above. The parts were then dissected away to expose the tumour, which it was soon ascertained extended beneath the clavicle, and that it pressed hard upon the posterior surface of the summit

of the sternum. I tried long to make room for the application of a ligature to the innominata without removing more important structures. Finding this, however, almost, or quite, impossible, I proceeded to remove the summit of the sternum, and the sternal extremity of the clavicle. This barely made room sufficient to enable me to reach the arteria innominata, owing to the large size of the aneurismal tumour at that point. In fact, one-third of the innominata was already dilated by the aneurism, so that I had to ligate that vessel within three-fourths of an inch of the aorta. The patient lost but little blood during the operation, and was comparatively comfortable for five days. After that time, however, he became restless, had dyspnœa, retention of urine, and gradually sank, until the 9th, when he expired.

Autopsy.—The cavity of the right side of the heart was slightly dilated. The right lung was adherent to the posterior wall of the chest, and was slightly tuberculated. Serum was found within the pleura and pericardium. Purulent matter was found in the centre of the right kidney, while the left one was healthy. The liver, alimentary canal, and brain were found free from the evidences of disease.

Strange to say, up to the period of the operation the patient had complained of no derangement of the urinary apparatus, though the partial disorganization of the right kidney had evidently much to do in hastening his death.

San Francisco, March 20th, 1859.

TRANSACTIONS OF SOCIETIES.

Art. X.—*Summary of the Transactions of the College of Physicians of Philadelphia.*

March 2. *Effect of Respiration on the Size of the Heart.*—Dr. Da Costa read the following note in continuation of a previous paper:—

Several months ago, when conducting some observations respecting the influence of the respiration on the position of the heart, I was struck with the very decided change which occurs in the sounds and in the extent of percussion-dulness during a held expiration. The dulness increases markedly, especially in an upward and transverse direction; the sounds, particularly the first, are manifestly altered. The question presented itself to my mind, how far these phenomena were due to a mere change of position of the heart and the adjacent borders of the lung, or how far they might be owing to a distension of the heart during the prolonged expiration?

To arrive, if possible, at some conclusion on this subject, I instituted a series of experiments, with the kind aid of several professional friends, and especially am I indebted to Drs. Brinton, Kane, and Hammond, for their assistance.

Experiment.—A rabbit was etherized, and the operation of tracheotomy performed. The heart was previously listened to, and its action was observed to be very rapid; the chest was then laid open and the organ exposed. On cutting away the pericardium, whilst respiration was kept up through a tube inserted into the trachea, it was immediately noticed that during a forced inspiration the left auricle and ventricle, and, indeed, the whole heart, as far as it was exposed, appeared small; whilst, when the stop-cock of the tube was turned off during an expiration, both the ventricle and auricle were distended to almost twice the size they presented during a full inspiration. The longer this state was kept up the greater became the tumefaction on both sides, until it finally seemed as if the heart would burst. But a full inspiration relieved it, and it returned to its former shape. By careful dissection, a view of both sides of the heart was obtained, and the same appearances were recognized on the right side; that is, like on the left side, when the lungs were permitted to sink back and the breathing stopped, the ventricle and the auricle swelled enormously, but immediately diminished when the pulmonary tissue was again filled with air. The effects of a continued and held inspiration were not particularly studied, but

it was specially noted that the same phenomena described as occurring in expiration were obtained by pressing on the lung, and emptying it mechanically of the air it contained.

Exp.—The same experiment was repeated on another rabbit, and with the same results. The swelling of the auricles was not as marked; that of the ventricles was. It was especially noticed that during the fixed expiration the ventricles were distended both during their contraction and relaxation, and that the action of the heart became very laboured. The point of the heart appeared rounded.

Exp.—On a frog, I was enabled to ascertain the precise difference in the size of the heart during a fixed expiration and inspiration. The two auricles measured in their transverse diameter $17\frac{1}{2}$ mm. during a full expiration; 16 when the lungs were moderately filled with air; $15\frac{1}{2}$ in a full inspiration, and only 14 mm. during the most expanded state of the lung. The ventricle varied by 2 mm. during the extremes of the acts of respiration.

Now these experiments certainly prove that during a protracted state of expiration, in which the blood is but imperfectly, or not at all, aerated, *both* sides of the heart become clogged with blood.

Exp.—To enable me to study the succession in which this distension occurs, Dr. Brinton separated the sternum of a dog which had been poisoned with woorara. Artificial respiration being kept up, we noted the following: "The rapidity of the heart's pulsation, immediately after the stoppage of the breathing, and whilst the lungs are moderately collapsed, is the same as before—28 beats in ten seconds. Both ventricles become somewhat swollen soon after the respiration is discontinued, but we cannot decide which, if either, begins to swell first. On the right side, the auricle and the ventricle both swell, and, we think, without being too positive, that the ventricle commences to swell before the auricle; *we are sure of it as regards the left side.* The pulmonary artery enlarges considerably before the pulmonary veins or the left auricle. At a later period the left auricle and the pulmonary veins increased in size almost simultaneously, but the auricle first. Blue blood appears in the pulmonary veins and on the left side of the heart before there is any excessive swelling of any part of the organ. As the pulmonary artery becomes engorged, a well-defined clacking noise is distinctly audible."

I repeated this experiment some time afterwards on another dog, so as to satisfy myself as to the relative time of swelling of the ventricles, auricles, and pulmonary artery, and observed exactly the same.

It demonstrates that when air is prevented from entering the lungs, and they recede, both sides of the heart distend—the ventricles before the auricles, the pulmonary artery before the pulmonary veins. It is not, nor indeed are any of the observations, conclusive as to what takes place during a fixed inspiration; but it is as to what happens when the breathing is

arrested whilst the lungs are only moderately distended with air. The question now arises, and a difficult question it is to solve, in how far is it probable that the same phenomena occur in man during a fixed expiration? Can we, taking the experiments just detailed as a starting point, assert that they occur at all? Now I am perfectly aware that no such states, precisely as those described, can in the human subject supervene on the prolonged expiration. I am perfectly aware that in experiments on the respiration of animals we have to take into account the element of asphyxia; that on the one hand the altered pressure on the thoracic viscera and the more perfect collapse of the lung, which the introduction of air into the cavity of the chest occasions, is very different from the ordinary condition of things; and that the movements of a healthy human chest are not the same as the thoracic movements in an animal whose breast-bone has been removed. But the visible enlargement of the ventricles, when the respiration is stopped, occurs so rapidly that I cannot but think that the same takes place during a fixed expiration in man, although perhaps to a less degree. There are other facts which render this extremely likely, namely, the swelling of the jugular veins, during a full expiration, and their diminution in inspiration; the changed character in expiration of the pulse, which is apt to quicken, and still more constantly becomes much feebler, not only at the wrist but in the temporal arteries. We can add to these that at the same time the impulse of the heart becomes more distinct and extended, and the sounds alter in character, over the left as well as over the right ventricle.

I should speak more positively on the subject were I able to say more positively what is the exact mechanical effect of the acts of respiration on the pulmonary circulation. The opinions of careful physiologists vary widely on this point; yet the weight of argument seems to lie on the side of those who maintain that in expiration the circulation through the lung is accomplished with some difficulty. If so, the explanation of the enlargement of the heart would be this: The circulation is somewhat obstructed in the lung; the right heart becomes engorged; the blood flows to the left side; but it does not leave it very freely, because it is not very perfectly aerated if the expiration is continued a long time.

This, too, will only be admitted if the analogy with what occurs in experiments on asphyxia in animals be admitted; and if it be conceded that the hindrance to the flow of blood in this state occurs to a great extent by the capillaries all over the body refusing to receive the impure blood the heart injects into them—a fact which some of the experiments of Dr. John Reid render more than highly probable. Or, not to go as far as this, I will say that if there is any reason why the general capillary circulation should be retarded during a fixed expiration, it will explain why the blood accumulates in the heart and venous system, and does not pass as freely into the smaller arteries.

There are other points regarding the pressure on the walls of the arteries and veins during the acts of respiration that have been elucidated by the labors of Magendie, Poiseuille, Ludwig, and Donders, which ought to be taken into account. But I shall not now enter further into the subject.

The difficulty of drawing conclusions on a matter as complicated as this is very great. Nor do I intend them to be final. I have merely wished this evening to call the attention of the College to them, in hopes of being able at some future time to furnish more extended data.

I cannot, however, leave this subject without alluding to the erroneous view, still so prevalent, that in asphyxia the blood collects in the venous system and on the right side of the heart, and that the non-aerated fluid does not reach the left side of the organ. If the experiments above detailed prove nothing more, they certainly prove how faulty is this still generally received doctrine; they certainly show that black blood may distend the left side of the heart. Whether the same phenomena occur if asphyxia is brought on whilst the lungs are fully inflated, I cannot say, since I have not as yet studied that question. But I can say that, if they do occur, they are not produced so quickly.

Arsenic in Obstinate Chronic Bronchitis.—Dr. WOOD observed that his attention had long since been attracted to the probable existence, in certain cases of obstinate chronic inflammation, no matter in what part of the body it might be situated, of the same state of system which gives extreme obstinacy to some cutaneous eruptions, such as psoriasis and lepra. This view is of practical importance; as arsenic, having proved a most effectual remedy in the cutaneous affections alluded to, might be equally beneficial in obstinate chronic inflammation elsewhere, if possessed of the same systemic character. The idea is not a new one. Professor Simpson, of Edinburgh, having been led to the supposition that a certain obstinate affection of the bowels, not uncommon in that city, was of a nature similar to cutaneous eruptions, employed arsenic in it with very beneficial effect. The same remedy has been long employed in obstinate periostitis, and with great asserted benefit in chronic nodosities of the joints of a rheumatic character. I have frequently thought of using it in chronic bronchitis, which had resisted ordinary treatment, but never carried the idea into effect until, in a case of nine or ten years' duration, which came under my notice some time since, connected with psoriasis of the face, I had a fair opportunity of trying the remedy. Under the use of Fowler's solution, in the dose of from three to five drops, three times a day, continued for six or eight weeks, the cutaneous eruption and chronic bronchitis were both so much relieved that the remedy was discontinued. Indeed, both affections had almost, if not quite, disappeared; and the patient had not been equally free from his bronchial affection at any time for years before. In consequence, however, of apprehension of injury to the stomach, not well founded

I believe, he prematurely omitted the medicine; and three or four months afterwards both affections began to reappear. I am again using the solution in the case, and thus far, with a similar result.

Stomatorrhœa Vicarious to the Menses.—Dr. Wood also made the following statement: "During my last term of service in the Pennsylvania Hospital, a case of stomatorrhœa occurred, which appears to me worthy of notice. The patient was a woman, of about twenty-five years of age, in other respects apparently in good health. She had for three months been affected with a very profuse and disagreeable discharge from the mouth, which she herself supposed to proceed from the stomach. I soon, however, convinced myself that the liquid discharged was a mixture of saliva and a mucoid secretion from the lining membrane of the mouth and fauces. It was nearly colourless, somewhat viscid, and of an unpleasant odour and taste, and appeared to be constantly flowing. As there was evidence of some inflammation of the mucous membrane, I considered the case one of simple chronic stomatitis, and treated it accordingly, both by general and local remedies for a considerable time, but without the slightest advantage. My attention having at length been directed to the menstrual function, I found that it had been arrested about the same time with the occurrence of the discharge from the mouth. Thinking that the two affections might be connected, I put the patient on the use of aloes and the pill of carbonate of iron, with the hot hip-bath daily, which apparently had the effect of restoring menstruation, after which, the affection of the mouth ceased immediately. This case may prove useful, if in no other way, by inducing an early inquiry into the state of the menstrual function under similar circumstances."

May 4. *Common Salt in Epistaxis.*—Dr. Hays stated that he had been induced, by the report made to the College in November last of a case of epistaxis promptly arrested by the administration "of common salt taken into the mouth in doses of a teaspoonful" (see *Trans. of Coll.*, Nov. 5, in *Am. Journ. Med.*, April, 1858, p. 390), to try the remedy in an obstinate epistaxis to which he had been recently called.

The subject of this case was a lady 80 years of age, who was seized with profuse epistaxis about midnight, and when seen by Dr. Hays two hours afterwards was still bleeding copiously; at least eight ounces of blood had been lost. Cold applications to the nose, forehead and back of the neck, which had been already used, were repeated, and these failing, the salt was administered as recommended by Dr. Morris, but without the least benefit. The hemorrhage was finally arrested, but not until about fourteen ounces of blood had been lost, by the application to the inner surface of the nostrils by means of a camel's hair brush, of the tinctura ferri chloridi. At first this was applied diluted with about one-third of water, but afterwards it was used still stronger.

It is proper to state that the difficulty in arresting this hemorrhage arose in great part from the impossibility of preventing the patient from blowing her nose and thus displacing the clot or from drawing out the plug with her fingers. For the patient, though willing to do what was desired, from her weakness of memory would repeatedly do that against which she was especially cautioned, and despite the watchfulness of her attendants frequently renewed the hemorrhage by displacing the coagulum.

Dr. Levick said a case of epistaxis had come under his notice, in which the use of common salt had entirely failed to arrest the hemorrhage. The patient was a man of about forty years of age, a free liver, who had for several years been liable to such an attack in the month of February. No attempt was made to suddenly check it; but when it became exhausting, common salt was resorted to, but proved entirely unavailing. The bleeding was at last arrested by plugging the nostrils with conical pledgets of lint, rolled in powdered kino.

Dr. Ruschenberger also had tried the salt, as recommended by Dr. Morris, in a case of obstinate epistaxis, without effect. The patient was an old gentleman; the bleeding continued until the plug of lint was resorted to, as in the case referred to by Dr. Levick.

Dr. F. Bache remarked, in reference to remedies proposed for hemorrhages, that it was often difficult to distinguish the event from the result in these cases, on account of their tendency to a spontaneous termination; and that, hence, the accidental coincidence of a cessation of the hemorrhage with the administration of a remedy, might lead to a very erroneous estimate of the value of the latter.

Dr. Hewson referred to a case of epistaxis occurring in the course of an attack of purpura, in which the use of Monsel's persulphate of iron, internally, in doses of two grains dissolved in a drachm of water, every four hours, promptly checked the hemorrhage, and gradually cured the general disease.

Ligature of Right Subclavian Artery for Axillary Aneurism.—Dr. H. E. Drayton read the following note of a case in which this operation resulted fatally, from pyæmia, on the 22d day:—

I. W., aged 37, tailor, born in Germany, general condition feeble, was admitted into the Episcopal Hospital of Philadelphia, March 25th, 1859, for injuries of right shoulder and side, caused by a recent fall. As the diagnosis was uncertain, the arm was simply placed in a sling, and bathed with volatile liniment. In this condition I found him, on taking charge of the wards as attending surgeon, on the 1st of April. I examined him repeatedly, but could make nothing out of the case, except that there was constantly greater pain than the apparent injuries accounted for, although there was no marked swelling; on the 7th of April, however, I discovered

a distinct aneurismal sound at the anterior part of the axilla, and under the clavicle.

The symptoms continuing, a tumour rapidly developing, and the arm vibrating responsively to the aneurismal thrill, a consultation with my colleagues, Drs. Hunt, Thomas, and Kenderdine, was held April 13th. They confirmed the diagnosis, and advised immediate operation, but the patient would not consent.

The symptoms increased in severity until the 16th of April, when the patient agreed to an operation, and the next morning was appointed for the purpose.

On the morning of the 17th an evident change had taken place; the tumour was reduced in size, with feebler throbbing, and diminished sounds; as also there was no pulse below the tumour, and the man appeared to be much easier, we were led to hope that such alteration had taken place in the condition of the parts as might possibly result in a spontaneous cure. The operation was consequently again delayed.

This improvement continued until the 21st, when the tumour increased nearly one-third in twenty-four hours, now presenting an enormous swelling in the axilla, with enlarged blue veins running over it. The arm was œdematous and much reduced in temperature. The radial pulse had returned, as well as a feeble though distinct pulsation in the tumour, with intense pain.

On the 22d, assisted by my colleagues, and the resident physicians, Drs. Grier and Ingersoll, I performed the ordinary operation of tying the artery above the clavicle. This was tedious, as from the great swelling there was such displacement as to render finding the vessel difficult. The artery must have been tied at least three inches below the surface. The ligature was passed by Gibson's aneurismal needle; and, upon being tightened, immediately arrested the flow of blood to the tumour, causing at once an entire cessation of both sound and pulsation. No vessel having been wounded, there was very little loss of blood.

From April 22d to May 1st there was some improvement, the tumour and œdema having diminished, and the temperature having risen in the arm. On the 26th there was slight pulsation at the wrist through the collateral circulation, and the wound was gradually uniting. May the 1st, fever set in and, during the night, the man became delirious, jumped out of bed, and tore open the wound, but fortunately without disturbing the ligature; this came away on the 9th, without any secondary hemorrhage. After this date he did not improve, but gradually became more feeble, suffering pains in the joints, with hectic flush and profuse sweats, delirium, coma, until he was released by death, which took place on the 14th.

Autopsy, 36 hours after death.—Rapid decomposition. Brain, lungs, liver, and heart healthy; large quantity of fluid in pericardium. In the sac of the aneurism there was more than a pint of thin blood streaked with

pus. The sac had opened into the shoulder-joint. The parts were so much disorganized that it was impossible to inject them. The ligated subclavian was found impervious, and adherent to the surrounding tissues. Its humeral end was shrunken to the size of a knitting needle. The axillary and brachial arteries were so soft and flat as to be mistaken at first for veins; these, on the contrary, being so filled in places with coagulated blood as to appear like arteries. In various parts of the body the veins were found filled with pus. The origin of the aneurism was found to be a small opening in the axillary artery, which vessel was no doubt prone to rupture, on account of a diseased state, resulting from the long continued use of a crutch, rendered necessary by a twice-broken, badly united femur.

During more than ten days immediately following the occurrence of the fall there was no tumour; but after the first symptoms had appeared, there was such rapid development and such acute pain, as to give rise to a very reasonable suspicion of malignant growth. The tumour could not be emptied by pressure. The cause of death was, undoubtedly, phlebitis.

Chronic Inflammation and Softening of the Brain.—Dr. LEVICK exhibited the brain of a woman who had died, fourteen hours before, in the Pennsylvania Hospital, and gave the following history of the case: The patient was an unmarried woman, æt. 38 years, who had been employed as an upper servant, and whose duties had not been arduous. Her health had been good until six months previously, when it was noticed that there was some mental confusion; that, in arranging the furniture of a room, it was placed in an improper position, bureaus out in the middle of the room, etc. Somewhat later than this, she began to complain of pain in the right side of her head, became of irritable temper, and restless. The pain, which would disappear entirely for a time, closely resembled that of neuralgia, and was treated with valerianate of ammonia without any permanent benefit. About this time she complained that she was unable to hold her needle long enough to sew. Six weeks ago, the pain became intense, and she was obliged to remain in her bed; delirium and excessive restlessness now set in, continuing for a time, and then disappearing. Two weeks later, she was brought to the hospital. She had at this time a cool skin, a frequent pulse, pain in the right side of the head, referred to the mastoid region and its vicinity, mouth distorted toward the right side, firm rigidity of the left arm, but no paralysis of the lower extremities, no want of control over the sphincters, and no sick stomach. The treatment consisted of a purge of compound powder of jalap, and the exhibition of small doses of calomel. She was unintentionally salivated, which was followed by a temporary alleviation of her symptoms. These soon returned with increased intensity; the tongue became dry and incrusted with sordes; these again disappeared, again to return, and she died this morning, her symptoms being rather those of exhaustion than of cerebral effusion. For a few days before her death

she had lost the control over her bladder and rectum. During the last ten days of her life it was found necessary to support her by the exhibition of wine and bark.

The brain alone was examined. It is of the usual size, appears to be healthy on its exterior, but the posterior portion of the right lobe, near its centre, has undergone very great disorganization. It is of a pale yellowish color, is infiltrated with serum, is completely softened, eroded, and resembles very much an abscess of the brain, although the altered and softened cerebral substance has not undergone the complete conversion into pus. It is an illustration of "red softening," the result of slow and long-continued inflammation, differing even in its physical aspect from the pale creamy softening of imperfect cerebral nutrition.

This case exhibited during life, to a very great degree, that remarkable fact connected with disease of the brain substance, which has not escaped the notice of pathologists, the partial or complete subsidence of all the symptoms of disease, their absence for a time, and their recurrence with a regularity almost identical with that of periodical fevers. So marked is this periodical exacerbation in some cases of disease of the brain, that the physician is tempted to resort to the usual anti-periodic remedy; and what is interesting is the fact that in some of these cases quinia seems to exert for a time a controlling influence. In this case the patient was at times so entirely freed from all her alarming symptoms that the suspicion of hysteria could not fail to suggest itself, soon to be dissipated by a violent manifestation of the most aggravated phenomena, reminding one of the gradual filling and sudden discharge of an electrical battery.

July 7. *Emphysema, with deep-seated Tubercle of the Lung.*—Dr. Levick remarked that a case of extensive disease of the lungs had recently been under his care in the Pennsylvania Hospital, in which the co-existence of two pathological conditions so antagonized each other as to permit the production of physical signs identical, or nearly so, with those of the healthy chest.

An old man, who had been sick for eight months, entered the hospital with hoarseness, cough, hectic, diarrhœa, and great emaciation, presenting, in fact, all the rational symptoms of tuberculous disease. On percussing the chest, it was found very resonant throughout, but not much more so than could be accounted for by its extreme emaciation. Auscultation revealed but little deviation from the natural respiratory sounds. There was some rudeness of the vesicular murmur below the right clavicle, and an occasional subcrepitant rale at the lower part of the lung; but, elsewhere, the respiratory murmur did not differ from that of health.

The man was found dead in his bed by the watchman on his nightly visit. Upon removal after death, the lungs did not collapse, and the entire superficial portion was found to be studded with large emphysematous vesi-

cles. Beneath this, and occupying nearly the whole of the deep-seated structure of the lungs, were large masses of tubercle surrounded by consolidated lung, the tubercle not having undergone softening. Even after death, percussion gave a clear sound, and the lungs floated in water.

Here, then, were two physical conditions opposed to each other, and, to some extent, equalizing each other. The dulness on percussion and increase of bronchial respiration, which should have been produced by such an amount of tuberculous deposit, were antagonized by the dilatation of the air-vesicles and the feeble respiration of the emphysema of the whole superficial portion of the lungs. Partial emphysema in phthisis is of frequent occurrence, perhaps almost a necessary attendant of the disease; but emphysema to such an extent, and producing such changes in the physical signs I had never before witnessed.

In such a case, very strong percussion might perhaps have developed the condition beneath, but ordinary percussion failed to do so.

Further examination showed the heart to have undergone fatty degeneration, and tubercles to exist in the bowels and the larynx.

Congenital Fissure of Upper Half of Sternum.—Dr. A. M. SLOCUM stated that he had seen, within a few days, a congenital fissure of the upper half of the sternum, in the person of Margaret D., æt. 25 years, a native of Ireland but a resident for four years in the United States. He reported the case from its similarity in some points to the noted one of Mr. Groux, though not possessing the same attraction, inasmuch as it does not admit of the interesting physiological experiments of which his is susceptible.

In form, the fissure is irregularly oval, complete above and extending down to a point opposite the ends of the third ribs, and being bordered on each side by a bony ridge with which the ribs articulate, and which is continuous with the body of the sternum. It is filled up with a strong ligament, probably elastic, covered by the common integument.

From the top of the clavicles to the bottom of the fissure is about three inches; during ordinary respiration the fissure is an inch and a half wide, but by a forcible effort it can be increased to two inches, and also diminished to only one-half an inch.

By making an attempt at inspiration, at the same time closing the nostrils and mouth to prevent the admission of air, a deep depression is formed in the fissure, and the bony ridges are brought very near together. By reversing these efforts, viz., by making a forcible attempt at expiration, after inflating the lungs, while the mouth and nostrils are closed, a large oval tumour, the full size of the fissure, is produced, which yields a clear sound on percussion.

During rest, there is no marked pulsation felt in the fissure, but any mental or physical exertion on the part of the patient causes a palpitation of the heart, the impulse of which is then readily seen and felt at the fissure. This case has not received as critical an investigation as its rarity demands.

FISKE FUND PRIZE ESSAY.

ART. XI.—*On the Effects of the Use of Alcoholic Liquors in Tubercular Disease, or in Constitutions predisposed to such Disease.* By JOHN BELL, M. D., of New York. The Dissertation to which the Fiske Fund Prize was awarded, June 1, 1859.[1] (Published by request of the Rhode Island Medical Society.)

IN writing upon the subject proposed for an essay, I have thought it advisable to restrict slightly its extent. I have had more especially in view the influence of the use of alcohol upon that form of tubercular disease which develops itself in the lungs. Pathologists unite in considering tubercle to be the same substance, wherever it makes its appearance, and, for this reason, in a philosophical treatise upon pathology, the various forms of disease which have their origin in this dyscrasy, should be considered in connection. But the effects of tubercle are so various in different organs that the treatment must necessarily be somewhat different; indeed, they can hardly be considered together with respect to any single remedy. I am not aware that alcohol has ever been recommended as a therapeutic or prophylactic agent in the tubercular hydrocephalus of children, neither has it in tubercular disease of the external lymphatic glands, or those of the mesentery. There are no statistics extant to show the effects of alcohol in those predisposed to these diseases, for they are almost peculiar to that time of life when alcohol is not used as a beverage; and one would hardly feel justified in *experimenting* on such patients with such a weapon. It is for these reasons that I have confined myself to somewhat narrower limits than the subject implies.

Phthisis is by far the most frequent form of tubercular disease, and is much more fatal than all others united. It is also in this form that alcohol has been especially recommended. From these considerations, I think it will appear that this curtailment of the subject will rather increase the value of the essay, inasmuch as the conclusions can be arrived at with greater certainty. In the application of statistics to medicine one of the first requi-

[1] The Trustees of the Fiske Fund, at the annual meeting of the Rhode Island Medical Society, held in Providence, June 1, 1859, announced that the premium of two hundred dollars offered by them in 1858, for the best dissertation on the following subject: "*The Effect of the Use of Alcoholic Liquors in Tubercular Disease, or in Constitutions predisposed to such Disease, to be shown, as far as possible, by Statistics,*" had been awarded to the author of the dissertation bearing the motto—

"*Occasio præceps, experientia fallax, judicium difficile.*"

And upon breaking the seal of the accompanying packet, they learned that the successful competitor was John Bell, M. D., of New York.

JAMES H. ELDREDGE, M. D., East Greenwich,
CHARLES W. PARSONS, M. D., Providence,
HENRY E. TURNER, M. D., Newport,
Trustees.

S. AUG. ARNOLD, M. D., *Secretary of the Fiske Fund Trustees.*

sites for accuracy is to dissect out the subject from all its connections, and present it clear and single to the view.

It is undeniable, that within a few years there has been a growing opinion that the use of alcoholic liquors is advantageous in the case of persons predisposed to phthisis, and even in those already the subjects of tubercular deposition in the lungs. And this has been the case not only with the public at large, whose appetites or pecuniary interests have had more to do with the formation of the opinion than proof of any form or degree, but also with medical men, ever ready to seize upon anything which may prove of advantage in so common and destructive a malady.

But the history of the therapeutics of consumption warns us that a favourable estimate of a remedy may gain general consent upon very slender grounds. The fate of tartar emetic, digitalis, iodine, and cod-liver oil (to a certain extent), each at one time believed to be almost a specific, ought to warn us to make a most careful and impartial estimate before acceding to an opinion which time may prove to have been too hastily adopted. To determine the truth or falsity of this opinion is the object of this essay, and it is intended, in accordance with the proposed terms of the subject, that it shall be done entirely by statistics. However strong objections may be brought against this mode of reasoning in medicine, if judiciously employed, every one feels the force of it. It would have been easy to gather the opinions of authors, or even to have ventured in person upon the fascinating ground of theory. But this method would have been as little satisfactory to the writer as convincing to the reader. The accumulation of statistics, however, is not an easy task. Favourable opportunities for a series of accurate observations are rare, and the power of taking advantage of them limited, unless, like the distinguished originator of the numerical method, one's whole time is devoted to this single object. But there are several causes which I have found to render the collection of statistics upon this subject especially difficult. The causes which are believed to be active in the production of tuberculosis are so numerous that it is absolutely impossible to disentangle a single one and determine its effects with certainty. Again, the moral stigma attaching to the use of alcohol renders it extremely difficult to determine the degree to which it is used. And, in exhibiting it as a medicine, patients are too apt to think it falls to them to regulate the quantity and frequency of the dose.

To determine a question of such intricacy, with any approximation to certainty, would require a long time and a multitude of labourers. Such a determination, however, it is the duty of the profession to arrive at as speedily as possible, not only on account of the importance of the question itself, but on account of its connection with morals. It is hoped that the statistics here presented may assist in the solution.

I have endeavoured to present all the facts attainable which bear upon the subject directly or indirectly; first giving the pure results, and afterwards presenting those points—impossible to be reduced to a numerical form—which it is thought may increase or diminish the confidence with which we should regard them. If any of these facts should seem to be too remotely connected with the subject, the excuse for presenting them is a desire to bring into one view everything which may assist in the solution of so difficult a question. It is perhaps not improper to state that the question has been approached without a bias to either side. It would have been easy, by a selection of such statistics as favour one view and the exclusion of all others, to arrive at the truth of a preconceived hypothesis with the

appearance of conclusive certainty. That this certainty does not appear to be arrived at will, perhaps, be considered sufficient proof of the impartiality and good faith with which the following facts have been collected and presented.

Before bringing forward those statistics which bear upon the solution of the question itself, it may not be unprofitable to glance at what has already been written upon the subject, and has been instrumental in giving that direction to public opinion in the profession which undoubtedly exists. After a careful examination of the literature of the subject, it is difficult to imagine how so wide-spread a belief could have arisen from so few recorded facts. In most of the monographs upon phthisis, allusion is made to the use of alcohol as a therapeutic agent; but it is generally only recommended in the later stages of the disease, when the strength is failing, and without intimating that it is thought to possess any especial curative power, further than to prolong the struggle for a time. Even here no facts are presented in support of the opinion, which must consequently be taken as a mere theory.

After a careful examination of all the leading medical journals of this country and the foreign ones which circulate here, I am able to present only the following instances where anything has been said of sufficient importance to be likely to give a direction to the sentiment of the profession: In the *New England Quarterly Journal of Medicine and Surgery* for 1843, Dr. Jackson has given the results of the autopsies of 35 persons who were known to have been intemperate; in these, tubercles were found in the lungs in five cases. He infers, therefore, that the use of alcohol is advantageous, so far as liability to phthisis is concerned. In the *New York Journ. of Med. and Surg.* for 1844, Dr. Peters has given the results of about 70 autopsies of persons of similar habits: from the appearance of the lungs he draws the same conclusions, as to the effects of alcohol, as Dr. Jackson does. In both these papers, these inferences are only incidental to the main subject.

In the *Nashville Journal of Medicine and Surgery* for 1856 is an essay by Dr. Washington, in which the author theorizes that phthisis has its origin in deficient respiratory action, and that the use of alcohol will overcome the defect by causing a more rapid breathing. In the *Buffalo Medical and Surgical Journal* of the same year is a short essay in which the writer gives his opinion in favour of the use of alcohol in phthisis. One or two cases are also related in which recovery from that disease occurred under its use. Various other agents, however, were used together with the alcohol.

Two theories as to the causes of the deposition of tubercle in the lungs, from each of which the utility of alcohol as a therapeutic agent has been inferred, have been extensively circulated in the medical journals. The first of these is a chemical one. It supposes that the tissues of the body, and particularly of the lungs, are too rapidly oxidized, and accordingly that alcohol, like cod-liver oil, might supply the fuel for this abnormal combustion, and thus prevent a continual waste, if not supply material itself. The other theory is a mechanical one, and attributes the origin of tubercle to a deficient circulation of the blood, and a consequent retrograde metamorphosis of the tissues. In this hypothesis, too, alcohol is the remedy, by increasing the action of the heart. These theories I shall not notice further; and they are only mentioned here because I regard them as having assisted in giving currency to the prevailing opinion. Besides these instances, where something like argument is adduced in favour of the opinion, there are numerous other instances where the belief is avowed without any attempt being made to support it.

It will be observed that very little positive proof has been offered to the public as yet on the question; and it seems to me that other reasons have combined to give the direction to popular opinion which seems to exist. The following, I believe, are two of those reasons: The first, that the intemperate are very frequently of an originally robust form and vigorous health, and have a plethoric, *anti-consumptive* look. This will be spoken of more at large in another place. The second: the advertisements of liquor dealers, scattered broadcast, have probably, like a continual dropping, effected, in some degree, their object. To such an extent has this been carried, in some parts of the country, that whiskey may be classed among the quack medicines with almost as much propriety as any of the popular nostrums of the day. So far as I am able to learn, these few notices in the public journals, and one or two other reasons, have furnished the only basis for a belief in the antagonism of alcohol and phthisis.

The facts which I have been able to adduce in connection with the question may be arranged, for the sake of convenience, in two series:—

1st. Those bearing upon the question of the prophylactic power of alcohol.

2d. Those relating to its effects upon the system when tubercle is already deposited in the lungs.

And under the first of these divisions:—

a. The number of deaths from phthisis, and the degrees of intemperance in different places, with the connection between them.

b. The frequency of phthisis at different times in the same place, and its connection with the greater or less use of alcohol.

c. The comparative frequency of phthisis in the sexes, and how it is influenced by the use of alcohol.

d. The frequency of phthisis among persons pursuing different occupations, and the degrees to which they are addicted to the use of alcohol.

e. The frequency of phthisis among individuals known to have been in the habit of using alcohol, and among the temperate.

f. The age at which phthisis occurs in the temperate and intemperate.[1]

g. The duration of the disease in the two classes.

The most accurate mode of deciding as to the relative degrees of intemperance, in different places, I believe to be the number of deaths resulting from that cause. Still, however, this is liable to lead us into error somewhat, as it is influenced largely by the habits of the place, and the kind of liquor most employed. In want of a better criterion, I have accordingly chosen it as sufficiently accurate to show on a large scale the truth or falsity of the prevailing opinion that those who make an habitual use of alcohol are decidedly less likely to be attacked by phthisis than the temperate. I do not claim more than a strong probability for the truth of indications arrived at by so uncertain a test.

The mortuary statistics of England are worthy of great reliance from their accuracy; and I have accordingly drawn largely on them. The following figures, drawn from the reports of the registrar-general of that country, are deserving of consideration. They exhibit the number of deaths

[1] The term "intemperate" is used very differently by different persons, according to their various estimates of the influence of alcohol, both physical and moral. Without intending to offer an opinion on this point, it will be used in this essay, for convenience, as applicable to those who make an habitual use of alcoholic liquors of any kind as a beverage. Those who often pass several days in succession without the use of them would be classed among the temperate, even if they occasionally used them to excess.

from phthisis and from intemperance, per million of inhabitants, for each of the eleven districts into which England and Wales are divided. The table gives the average for seven years from 1848.

Districts.	Deaths from Phthisis.	Deaths from Intemp.	Districts.	Deaths from Phthisis.	Deaths from Intemp.
No. 1	3019	116	No. 7	2730	30
" 2	2677	40	" 8	3398	63
" 3	2602	36	" 9	2778	45
" 4	3050	26	" 10	2447	49
" 5	2706	26	" 11	3236	24
" 6	2618	33			

Here there seems to be no very strongly marked connection between the number of deaths from phthisis and from intemperance. The 8th district, with a high average of deaths from intemperance, stands high in the list as to phthisis; while the 11th, lowest in point of intemperance, is also high in respect to phthisis. Of the 6th and 10th, both low in phthisis, one is low and the other high in intemperance.

It is obvious that, in consideration of the many other causes acting one way or the other upon the production of phthisis, we can draw no conclusion as to the actual effect of intemperance. And yet the figures are not without value, for we may, with considerable certainty, conclude from them that the use of alcohol has not that decided effect in preventing phthisis that many believe it to possess; if it had, we should see its influence in some approach at least to a regular series. It is plain that its effects, whatever they are, are so slight as not to appear in the multiplicity of other causes. It should be borne in mind that a considerable portion of the inhabitants of each district use alcohol; but the proportion is probably represented by the number of deaths from intemperance with an approximation to accuracy.

If four of these districts, where the deaths from intemperance are greater than the average, be compared with the others where they are less numerous, we shall have, per million of inhabitants,

	Deaths from Phthisis.	Deaths from Intemp.
In 4 Districts	2910	68
" 7 "	2803	31

This would seem to indicate that the use of alcohol favors the production of phthisis. But the cities of London, Liverpool, and Manchester are included in the first class. In these, the deaths from phthisis are high. It is difficult to determine the result with accuracy for this reason. This comparison, however, goes to substantiate the statement made above, viz., that the effects of the use of alcohol cannot be very marked, either in preventing or causing the disease. Thus far, they show the popular opinion to be erroneous.

The following table shows the comparative annual average of deaths from phthisis and intemperance for each hundred thousand inhabitants in Boston for ten years, from 1835; in New York and Baltimore for the same time, and Philadelphia from 1830.

	Deaths from Phthisis.	Deaths from Intemp.		Deaths from Phthisis.	Deaths from Intemp.
Boston	291	35	Philadelphia	356	55
New York	455	33	Baltimore	411	29

In the comparison of these cities, we have a more favourable opportunity for arriving at the truth than in the previous table, as the population of them all is engaged in the same occupations, and has essentially the same

habits and modes of life. Yet here also, as far as we can perceive, the number of deaths from phthisis seems to have little or no connection with the degree to which the use of alcohol has been carried. At any rate, it is so slight as to be lost in the other causes of that disease. It would not be difficult to point out some of the causes which go to make the great difference in number in the deaths from phthisis in these cities. But the influence of alcohol could never be arrived at in such a way with certainty; and, as the table stands, it is sufficient to show the fact for which it was introduced, viz., that the use of alcohol has not a very marked effect, either in producing or preventing tubercular disease of the lungs. It would be easy to introduce an abundance of other facts to substantiate the conclusions already arrived at; but this can be done at the same time that we endeavour to determine what that slight influence may be.

b. In examining the number of deaths from phthisis and intemperance in the same place, at different times, we are freed from many of the causes of uncertainty inherent in those already given. In comparing the mortality of the same place, at different times, it is done under the favourable influence of the same climate, and the same habits and occupations of the citizens to a great extent. This method accordingly deserves a more attentive examination than the last; and we may expect more definite results. In the whole of England and Wales, the following table exhibits the mortality for a series of years.

	Deaths from Phthisis.[1]	Intemp.		Deaths from Phthisis.[1]	Intemp.
1838 . . .	59,000	343	1849 . . .	50,000	817
1839 . . .	59,000	424	1850 . . .	46,000	863
1840 . . .	59,000	424	1851 . . .	49,000	842
1841 . . .	59,000	448	1852 . . .	50,000	795
1842 . . .	59,000	405	1853 . . .	54,000	882
1848 . . .	51,000	797	1854 . . .	51,000	869

Here we have a marked increase in the number of deaths from intemperance, much greater than the increase of the population, during the period, will account for. That the number of deaths from this cause is a fair criterion by which to judge of the degree to which a population is addicted to the use of alcohol, is substantiated by the fact that during the same period the importation and manufacture of alcoholic liquors increased much more rapidly than the population during the same period (Chadwick, "Rep. of Poor-Law Commissioners"). Yet, during this period, there was an actual decrease in the number of deaths from phthisis, notwithstanding the large increase of population. This would be a strong argument for the prophylactic effects of alcohol, were it not for the fact that both the increase in the deaths from intemperance, and the diminution of those from phthisis, took place during the period from 1842 to 1848, when the causes of death are not reported. This fact renders it highly probable that it was owing to the change in nomenclature which took place during that period. During the last seven years, when the returns were much more accurate than previously, there was a slight diminution of the number of deaths, taking into account the increase of population, and at the same time a greater diminution in the deaths from phthisis. The general hygienic condition of the people had improved, and their wages increased during the period.

On the whole, I think that the only deduction which can be with propriety drawn from this table is that which has already been made, viz., that alcohol is not an active agent, either in preventing or producing phthisis.

[1] In round numbers.

The following table is similar to the last, exhibiting the mortality from phthisis and intemperance in London for the quarters ending with March of the following years :—

	Deaths from Phthisis.	Deaths from Intemp.		Deaths from Phthisis.	Deaths from Intemp.
1840	1910	19	1848	1630	56
1841	1838	19	1849	1626	62
1842	1781	21	1850	1792	39
1843	1787	31	1851	1811	53
1844	1904	30	1852	1872	48
1845	1972	39	1853	1823	64
1846	1571	51	1854	1869	63
1847	1873	59			

Here we have a marked increase in the number of deaths from intemperance up to the year 1847, after which period they remain nearly stationary. During the first of these periods, the deaths from phthisis rapidly diminished in number; and they also diminished, but in a less degree during the latter (allowance being made for the increase of population). This latter fact shows that during the whole period there was some cause not connected with the use of alcohol which was gradually reducing the mortality from phthisis. After eliminating this cause, whatever it may have been, I believe these figures, as they stand, are an argument in favour of the opinion that the intemperate are less liable to phthisis than others. They only need the corroboration which the same result in other places would give to become a very powerful one. Let us see whether they are so strengthened by a comparison with other places.

While in England there has been an increase in the use of alcoholic liquors, in this country, under the influence of the temperance reformation commencing about 1837 or 1838, there has been as marked a diminution, at least for a time. If the inference drawn from the statistics of London is correct, we should have an increase of phthisis in this country.

In Boston, from 1830[1] to 1840, 15.30 per cent. of the deaths were from phthisis; from 1840 to 1845, 15.13 per cent. were from the same disease. In the last of these periods, the annual number of deaths from intemperance had diminished more than one-half from what it was in the previous period (census of Boston, 1845). Here, with a marked diminution in intemperance, there is a slight diminution in the proportion of phthisis. This result at the same time goes to invalidate the correctness of the deduction from the statistics of London, while it corroborates the opinion already expressed as to the slight influence, either way, that should be attributed to the use of alcohol. The following table exhibits the number of deaths from phthisis and intemperance in New York for sixteen years. The table supposes the population of the city to be one hundred thousand each year.

	Deaths from Phthisis.	Deaths from Intemp.		Deaths from Phthisis.	Deaths from Intemp.
1835	530	36	1843	432	22
1836	549	27	1844	396	31
1837	513	45	1845	447	30
1838	418	38	1846	425	32
1839	436	39	1847	452	56
1840	415	32	1848	411	38
1841	454	35	1849	451	43
1842	398	25	1850	373	23

[1] I do not consider the returns of death from phthisis made before this period as sufficiently accurate to be depended upon.

Here there is no sufficiently regular increase or decrease of intemperance to make the table of much value.

The following comparison, though perhaps not of great value, will show which way the figures point. The average of deaths from intemperance is 35. In the years when it was less than this, the average number of deaths from phthisis was 429. In the years when it was greater, the number was 459. If this table is allowed to possess any value, it goes to show that the use of alcohol predisposes to phthisis.

In Philadelphia, during the period from 1830 to 1840, the deaths from phthisis and intemperance were as follows, per hundred thousand inhabitants, each year:—

	Deaths from Phthisis.	Intemp.		Deaths from Phthisis.	Intemp.
1831	385	78	1836	376	58
1832	380	87	1837	361	43
1833	351	76	1838	340	46
1834	335	62	1839	322	31
1835	356	40	1840	344	32

Here there is a sufficiently regular decrease of deaths from intemperance to make it obvious that it is not the result of chance. That this diminution was really accompanied by a corresponding diminution of intemperance is affirmed by Dr. Emerson (*Am. Journ. Med. Sci.*). In connection with the diminution in number of deaths from intemperance is a marked decrease in those occurring from phthisis. The series is sufficiently regular to allow us to draw the inference that they stand to each other in the relation of cause and effect, if we find the conclusion corroborated by other circumstances. There is certainly no other cause to which this result can be attributed, as, in other respects, the habits of the citizens underwent no change of sufficient importance to account for it.

The following table exhibits the same facts for the city of Baltimore from 1835 to 1845:—

	Deaths from Phthisis.	Intemp.		Deaths from Phthisis.	Intemp.
1836	338	54	1846	332	16
1837	417	37	1847	444	12
1838	422	48	1848	443	17
1839	401	30	1849	423	24
1840	351	35	1850	344	18
1841	432	28	1851	379	20
1842	444	87	1852	383	22
1843	431	14	1853	446	17
1844	440	10	1854	438	14
1845	432	20			

During the first five years, there is a decided diminution in the number of deaths from intemperance; afterwards, they are about stationary. The deaths from phthisis are nearly the same throughout. The first five years, which were much more intemperate than the last five, have about the same ratio of deaths from phthisis. On the whole, perhaps, this table favours, in a slight degree, an opposite conclusion to that drawn from the last.

For convenience of registration, the city of London is divided into thirty districts; and each of these includes one or more sub-districts. In the year 1841, each of the registrars of these sub-districts had a series of questions laid before him as to the sanitary condition of his sub-district. One of these questions was as to the character of the population in respect to temperance. I have endeavoured to take advantage of their replies to

assist in determining the question we are discussing. In some districts, the replies were indefinite; and I have consequently rejected them. The following table gives the annual deaths from phthisis per hundred inhabitants in each district where the replies to the above question were definite:—

	Temp.	Intemp.		Temp.	Intemp.
Kensington		.363	Whitechapel	.452	
Westminster		.384	Stepney		.373
Marylebone		.336	St. Olave		.594
Pancras	.323		Bermondsey		.427
Islington	.307		Newington		.386
Hackney	.306		Lambeth	.341	
Strand	.389		Camberwell	.304	
City of London	.355		Rotherhithe		.462
Shoreditch	.304		Greenwich	.482	
Bethnal Green		.230			
			Average,	.356	.395

The character of the population, its density and favourableness of locality, are pretty equally distributed, and could have had no great influence in causing this result. The general hygienic condition of the population of each of these sections can be judged of with considerable accuracy by the prevalence of typhus fever. The deaths from this disease in the temperate districts were at the same time .098 per cent. of the population; in the intemperate districts, only .083 per cent. Showing that, with the exception of this one habit, the latter class were more favourably situated as to health. And yet, in spite of this fact, the deaths from phthisis were most numerous in the intemperate districts. It is difficult not to believe that this preponderance was due, in part at least, to indulgence in the use of alcohol.

It is obvious that all these tables contain numerous chances for errors; and the dependence that is to be placed on them is only as indicating, in a very general way, the effects of alcohol. They are only introduced for the purpose of showing that the use of alcohol cannot have that very active prophylactic influence that is often attributed to it, so active that few persons who are in the habit of using it ever fall victims to consumption. That this opinion, in its full extent, is an error, the tables already given fully show.

c. Some important inductions can be drawn from a comparison of the two sexes, the degree to which they are addicted to the use of intoxicating liquors, and the proportion of deaths from phthisis among them. It will be gainsaid by no one that men are much more addicted to the use of these agents than women. In England, in 1848, 662 men and 135 women died of intemperance. The same ratio probably obtains in this country. During the same year, the deaths from phthisis were

Males	24,435
Females	27,227

The proportion of deaths among the females would be diminished considerably, if allowance were made for their composing more than half the population. Still, however, the popular opinion that females are more liable to the disease than males is true. The figures show, then, that the males are more addicted to intemperance, and least prone to phthisis. But do these facts stand in the relation of cause and effect? I believe most decidedly that they do not, but, on the contrary, that this preponderance of deaths from tubercular consumption can be shown to depend upon other

causes, and that, when these causes are eliminated, the greater intemperance of the males will be found to be accompanied by a greater liability to tubercular deposit, and that, too, especially in that time of life when there is the most marked difference between the sexes in proneness to the free use of alcohol.

Females are almost universally placed under worse hygienic influences than males. The in-door life they lead, their more sedentary occupations, the more vitiated air they breathe, their bad fashion of dress, and the smaller wages they receive, might well reverse the proportions of phthisis in the sexes if it were possible to express them in a numerical form. If, then, it can be shown that a single cause not enumerated above is more than sufficient to account for the excess of phthisis among the females, it seems to the writer a fair conclusion that the greater proclivity of the males to the use of alcoholic liquors is more than enough to counterbalance the anti-hygienic influence of all the causes indicated above, so far as the production of tuberculosis is concerned. This cause I believe to exist in menstruation and child-bearing, as the following facts conclusively show. Up to nearly the age of puberty, when the habits of the sexes are so nearly the same that we may consider the above causes of tuberculosis entirely wanting, the deaths from phthisis are nearly equal in both. At this period, neither menstruation nor the use of alcohol can have any influence. On the approach of menstruation, the deaths among the females increase with singular rapidity up to between 20 and 30 years, the period of greatest activity in the female reproductive system. At this time, five women die of phthisis to every three men. This ratio gradually diminishes during the next decade, as the uterine system becomes less and less the pivot upon which the health of women turns, till finally, at about 43 or 44 years of age, the ratio of deaths from this disease again becomes equal to that among the males. For a few years afterwards, the same process goes on; but it ceases at about the age of 50, and afterwards remains stationary. Now, this is precisely the age at which the reproductive function of women ceases. These facts are so striking and so regular in all mortuary statistics that it is impossible not to agree with the conclusions I would draw. In England,[1] in 1848, the deaths from phthisis in persons over 45 years of age were as follows:—

Males	5014
Females	5521

This disproportion would be still further increased if allowance were made for the greater number of females living at that age. From these figures we must conclude, that were it not for menstruation and its accompaniments more males would die of phthisis than females, notwithstanding the many unfavourable influences that the latter have to contend against. We might, indeed, expect 11 males to die for every 10 females—the ratio occurring above 45 years of age. To what is this fact due? It cannot be that the male constitution is more predisposed to the disease, for they are less disposed to disease of almost every kind, and in childhood there is very little difference in regard to phthisis. It cannot be the different habits of life of the sexes, for these all favour the males, and they are as strongly marked after 45 years of age as before. There is only left the fact that men are six times as much given to intemperance as women.

[1] In Bavaria, where the habits of the sexes are much more similar than in England or this country, as they assist in agriculture and other out-door employments, there died in seven years of phthisis 58,900 males, and 57,700 females, of all ages.

I have supposed above that the effects of the various anti-hygienic influences to which women are peculiarly exposed could not be represented in a numerical form. But this *can* be done, approximately at least, for it is in the country alone that these habits bear with peculiar force upon the female sex. In cities the habits and occupations of the sexes are more on an equality. But even here the advantage is, to some extent, with the males. Yet in spite of the unfavourable influence of menstruation and child-bearing more males than females die of phthisis in almost every city, year after year, when the preponderance of female population is especially great. In London there died of this disease

1838.		1854.	
Males . . .	4,057	Males . . .	3,914
Females . .	3,630	Females . .	3,340

and the proportions were nearly the same in every intervening year. The same fact is true in nearly every other large city of England. In New York there died of this disease—

1853.		1854.	
Males . . .	1,397	Males . . .	1,538
Females . .	1,342	Females . .	1,494

There must be some influence at work upon the males more than sufficient to counterbalance the evil effects of menstruation and bad hygienic influences taken separately, and nearly sufficient to neutralize both taken together. If we compare the males and females above 45 years of age, and living in cities, we shall eliminate both these influences to a great extent. Accordingly, under these circumstances, we find in London, in 1854, dying of this disease—

Males	1,010
Females	620

Or five males to every three females—exactly the reverse of the most unfavourable circumstances under which the females are placed.

I would not be understood to attribute *all* this difference to the use of alcohol, for other facts do not show so great an influence from that agent. But I believe it will appear, further on, that a part of it may, with truth, be held to result from bad habits in this respect.

d. People pursuing different occupations, from various reasons, are more or less given to the habit of using alcoholic liquors. The proportion of deaths from phthisis among these various pursuits, although obviously incapable of furnishing the data for an accurate determination of the question, will afford us probabilities sufficiently strong to corroborate or invalidate the conclusions already drawn from the facts previously presented. Lombard, in the *Annales d'Hygiène*, has given an extended table showing the effects of trades and occupations upon the frequency of phthisis. From this table I have selected, at random, some occupations under favourable hygienic influences, some of which are especially given to intemperance, while others are generally temperate. They occurred in the hospitals of Hamburg. There were admitted—

	Of all diseases.	Of phthisis.		Of all diseases.	Of phthisis.
Soldiers, Carpenters, Labourers	153	41	Copyists, Merchants, Instructors, Students	14	2

The first of these divisions is composed of occupations, the members of which are generally intemperate; or at least they are much more so than the latter. In the first class 27 per cent. of the cases admitted were of phthisis; in the second, only 14 per cent.

Some other occupations, peculiarly disposed to intemperance, presented a still greater ratio of cases of phthisis. An instance of this is seen in the case of the vagrant musicians, who exhibited the largest ratio of cases of phthisis. They are at the same time, perhaps, more prone to intemperance than any other occupation.

The same results appear in the report of the registrar of Paris for 1852. The following occupations were taken from this report, at random, in the same manner as those above. The figures represent the deaths from phthisis out of each thousand persons exercising those professions, during the year in which the report was made. A much more striking case might easily have been made out; but these occupations were selected in each case without knowing what the result was going to be:—

Soldiers Innkeepers Liquor-dealers	. . 4.04	Artists Advocates Instructors	. . . 3.07

Here, again, we have the same result though in a less striking degree—probably because the members were greater. Those professions inclined to intemperance are especially prone to phthisis.

Dr. Neufville (*Boudin's Statistique Méd.*), in a similar table, says, that in Frankfort-on-Mayne during a period of eight years, among—

Magistrates and Lawyers	6.8	per cent.	of the	deaths	were from phthisis.
Tailors	39.9	"	"	"	"
Shoemakers	36.4	"	"	"	"
Carpenters	35.9	"	"	"	"

The same result appears here still more strongly. It is difficult to find among the various statistics upon this subject, a single profession, the members of which are sufficiently numerous to prevent liability to a chance result, in which there is a large ratio of deaths from consumption, without that profession being especially addicted to the use of alcoholic liquors. Thackrah, in his work on "the effect of trades and professions upon health," says of almost every one, in which the number of deaths from phthisis is large, that it is also given to intemperance.

But there are a few occupations, the members of which are known to be peculiarly intemperate. An instance of this occurs in soldiers; these, in countries where enlistment is voluntary, are, almost to a man, addicted to the immoderate use of alcohol. They are, at the same time, more favourably situated as to hygiene than the bulk of the population; their food is abundant and of good quality, their clothing is good, they are neither sedentary in occupation nor overworked, nor exposed to vicissitudes of weather (except in actual service). Yet in spite of all these favourable influences they are more liable to consumption than the population at large among whom they reside. According to Tulloch (statistical returns of the British army), those in England afford twice as large a proportion of deaths from tubercular disease as the males of the same age who are not in the army. The same author, however, says, that in some parts of India, where the soldiers are particularly intemperate, the deaths from phthisis among the European troops are only about one-fifth as great as the general average in England. He draws the inference that intemperance may be con-

nected with an exemption from phthisis. It would hardly appear to be a just one, however, even from his own figures; for the deaths from this disease among the Sepoys, who are remarkably temperate, are still less numerous than among the Europeans. In other parts of India, too, where, probably, the same degree of intemperance prevails, the deaths rise to about the general average of England, showing that the freedom from the complaint is due to other causes (probably the climate). In these latter situations the native troops present a less mortality than the Europeans. In connection with this theory of Tulloch, is the fact that in some of the West India Islands, where the facilities for intemperance are quite as great as in India, the deaths from phthisis are more numerous than in any other division of the army, amounting in Barbadoes to 15 annually in each thousand soldiers. These differences are unquestionably more due to climate than to any difference in addictedness to intemperance.[1]

Among other occupations notoriously addicted to intemperance are victuallers, pot-boys, and brewers' draymen. Dr. Guy (*Journal of London Statistical Society*) has given the proportion of deaths from phthisis among persons engaged in these occupations.

Neither of these kinds of business is peculiarly unhealthy, yet out of 25 cases of all diseases occurring among pot-boys, 8 were cases of phthisis—a proportion nearly twice as great as obtains among other patients in the same hospital. A greater proportion of victuallers than of tradesmen generally, and of brewers' draymen, than of other labourers, died of the same disease, and also at an earlier age.

These proportions must be considerably increased when we take into consideration the fact that intemperance is also a cause of many other diseases, and would thus diminish relatively the *proportionate* number of cases of phthisis as compared with the total of deaths from all diseases. The following table, although alone of no great value, tends to corroborate the deductions of Dr. Guy. It is extracted from the reports of the Registrar-General of England, and shows the relative number of deaths from *all diseases* among innkeepers and beer shop keepers, compared with grocers, at different periods of life, among an equal number of each:—

	Grocers.	Innkeepers, &c.		Grocers.	Innkeepers, &c.
25 to 35 . .	100	181	55 to 65 . .	100	170
35 to 45 . .	100	196	65 to 75 . .	100	164
45 to 55 . .	100	179	75	100	145

Here the excess of deaths among the latter class is most marked at that period of life when the greatest number of persons die of phthisis. The same table also shows, approximately, how much allowance should be made in the facts presented by Dr. Guy, for the greater mortality among those occupations especially addicted to intemperance.

Somewhat analogous to the difference of occupation is difference of race. It has been the custom to attribute the large proportion of deaths from phthisis among the negro population of our northern cities to an unfavourable climate. May it not be that a part of it, at least, is due to their greater proclivity to intemperance?

It is a well-known fact that the lower orders are much more obnoxious to tubercular disease than the upper. Thus in Geneva, according to Lebert,

[1] Sweet (*Diseases of the Chest*) suggests that the freedom from phthisis in India may be due to the effects of the climate upon the liver, an organ believed to be, to some extent, vicarious in function with the lungs.

among the wealthy, 6.8 per cent. of the deaths were from those diseases, while it rose to 23.3 per cent. among the poorer classes. This difference, much greater than is commonly supposed to exist, could hardly be, unless a variety of causes concurred to produce it. It has been customary to attribute it to poor diet, vitiated air, the influence of certain occupations, &c. May it not be that the use of alcohol also has its influence in producing the result? The lower classes are certainly much more addicted to its use, and, in an agent so potent, it is, at least, a suspicious fact that those who use it most largely are most liable to tubercular deposit. At any rate so decided a difference in proneness to these diseases could hardly exist, if the use of alcohol had any very decided influence in preventing them.

Another class analogously situated, but, per force, particularly temperate, is to be found in the denizens of prisons.

Ancell (*On Tuberculosis*) has collected from the records of various prisons in England and this country, the causes of death among 76,000 prisoners. Of 1,872 deaths among these persons, 645 were of tubercular diseases.

This is certainly a very large proportion of deaths from such diseases, if they be compared with the mortuary statistics of society at large. But prisoners are composed of a peculiar class of individuals. A very large proportion of them are males, and almost the entire body are between 20 and 60 years of age. It is accordingly with people under these circumstances that they should be compared, in order to arrive at anything like an accurate determination of the effects of the discipline and confinement of a prison. The deaths among the above prisoners from tuberculosis were 34 per cent. of the whole. In England, in 1847, there died 116,000 males between the ages of 20 and 60 years. Of these, 36,600 were of tubercular diseases. This is about 32 per cent., a trifle less than occurred in the prisons. The ages of the prisoners is not given, but it is probable that a larger proportion of them were young men than in society at large. Some of them, also, were women. Both these circumstances would tend to increase the relative proportion of deaths from tuberculosis in comparison with the community in which they lived. It is certain then that there is no especial proneness among prisoners to tubercular diseases, so far as these statistics go; it appears to me that the tendency is rather the other way. No account is here taken of the effects of the various concomitants of prison discipline, the sedentary life necessarily led, the solitary confinement and deprivation of light, and, above all, that depression of spirits inseparable from such a position. All these must have an influence in the production of tubercular disease. There is still another cause which would tend to give a larger ratio of tuberculosis among prisoners than really exists. The deaths from other diseases would be diminished by the abstraction of alcohol, and thus present a *relatively* larger number from tuberculosis, unless these latter were diminished in the same ratio. If then, under all these adverse circumstances, the deaths from tuberculosis are not more numerous than among other individuals, we must conclude that there are some saving circumstances in prison life. It is difficult to imagine the existence of any unless it be the forced temperance existing there.

e. The statistics upon which those who have expressed the belief that alcohol is a prophylactic against phthisis, have principally depended for the support of their opinion, have generally been a comparison of the deaths from this disease among individuals known to have been intemperate with those occurring in society at large.

This mode is free from most of the causes which have given so much uncertainty to the statistics already brought forward. It is, perhaps, as free from uncertainty as any that can be adopted; and opinions founded on such facts, and adopted and presented by men of reputation in the profession, certainly deserve the most careful consideration. At first view, such a method might appear to be entirely free from any doubts or uncertainties. I believe, however, that there is one circumstance, overlooked by those who have presented such statistics, that casts a shade of doubt upon the entire accuracy of conclusions drawn from these data.

Dr. J. B. S. Jackson, in the *New England Quarterly Journal of Medicine and Surgery*, has given the results of the autopsies of 35 persons known to have been intemperate, "many of them grossly so." In these he found tubercles in the lungs in five instances, although only two of them died of phthisis. He concludes, from this, that such persons are less likely to die of that disease than others. Is this conclusion a just one so far as these figures go? How do they compare with those presented by the statistics of the society at large, in which these cases occurred? It is not likely that any of the autopsies performed by Dr. J. were upon persons under 20 years of age, as intemperance below that period is rare. We shall also, perhaps, not be far from the truth in supposing them all to have been males. I am unable to present the proportionate number of cases of deaths from phthisis among these classes of persons in Boston for the purpose of comparison; but they cannot differ materially from those in New York.

In this latter city there died, in the year 1854, 5,683 males, of 20 years and upwards, from *all* diseases; of these, 1,254 died of phthisis. To these a certain number should be added for those who died of other diseases, while affected with tubercles in the lungs, if we would obtain the number of those whom an autopsy would have proved to be tuberculous. (It is evidently with such that Dr. Jackson's cases should be compared.) The following observations of Louis (on phthisis) may be taken as representing the number that should be added for this reason: of 358 persons dying in the wards of Chomel, he found 123 to have *died* of phthisis, and 40 others to have *presented tubercles in the lungs*, but to have *died* of other diseases. We may conclude then that an autopsy would have revealed tubercles in the lungs of 1,662 persons out of the 5,683 spoken of above. The cases of Dr. Jackson give a percentage of 14.3 cases of consumption, while those of New York are 29 per cent., taking the temperate and intemperate together. The comparison, thus far, certainly bears out the conclusions of Dr. J. The number of cases, however, is small—perhaps so small as not to be of any great value, unless corroborated by other facts. Neither is it stated whether the cases occurred in hospital or private practice; this must be an important item in drawing conclusions from such data.

The proportion of consumptives who die in our hospitals is smaller, usually, than that in the community at large. Either such chronic cases are discouraged from entering the hospital, or those who know themselves to be sufferers from this disease prefer to pass the short portion of life that remains to them among their friends. It is certain that the proportion of deaths from consumption in hospitals is much less than out of them. Another important correction is to be applied to these and similar cases before they can be held to indicate the degree to which the intemperate are prone to tubercular disease. This is, the fact that the grossly intemperate are short lived. They not only have their own peculiar diseases, but are also much more subject to many others than the temperate. May it not be the

case, then, that, in the statistics of Dr. Jackson, the number of those dying of *other* diseases than phthisis was increased very largely, while the number of those affected by the latter remained stationary, or even increased also, but in a less degree?

(I believe this source of error has been often overlooked in these comparisons, as it evidently was in the article under consideration. It is not unlikely that this comparison of deaths from phthisis with the entire mortality of the intemperate, in the loose way that the non-professional public is accustomed to reason on medical subjects, may have assisted in giving origin to the popular prejudice as to the antagonism of alcohol to this affection; for among such persons, whether the opinion be true or not, it cannot be regarded otherwise than as a prejudice.)

If the intemperate lived only half as long as people generally of their own age, it is obvious that they would be exposed to the danger of contracting a deposit of tubercle for only half as long a period; and consequently, in a given number of deaths among such individuals, we ought to expect to find only half as many cases of phthisis (provided all ages were equally subject to that disease). If we suppose that the intemperate live only half as long as others, the cases which we are discussing would appear to present almost exactly the same ratio of deaths from phthisis as society at large. But it is highly probable that those who are intemperate, "and many of them grossly so," do NOT live half as long as others. The facts which I depend on to elucidate and prove this important point are contained in the "Report of the London Statistical Society" for 1851, in a paper by Mr. Neison, the actuary of a London insurance company. According to this author, the expectation of life among the intemperate (and he seems to give this word nearly the same signification as Dr. Jackson) is to the general average as 1 to 3.24. This is a result for which my readers will probably be as little prepared as I was myself. It was not arrived at, however, with reference to the question we are at present discussing, and is all the more valuable on that account. The source from which it emanates, too, and the large number of cases from which it is deduced (357), leave no room to question its substantial accuracy. But, singularly enough, the very facts presented by Dr. Jackson furnish us the means of corroborating the results arrived at by Mr. Neison. This will be seen from the following comparison:—

Dr. Jackson presents us with two *deaths* from phthisis, and three deaths from other diseases in patients already labouring under the former. As already stated, Louis, in a number of individuals, of whom one hundred and twenty-three died of phthisis, found forty others dying of *other* diseases while phthisical. In Louis's table, these cases are as 1 to 3 of the whole; in Dr. Jackson's, they are as 5 to 3. It would thus appear that the mortality was nearly five times as great in a given period (the length of time which phthisis lasts) among the intemperate reported by Dr. Jackson, as among those at large, reported by Louis. This must certainly be the case, unless we suppose that those diseases, and that state of the system brought on by the use of alcohol, particularly predispose to phthisis, an alternative that those who believe in the prophylactic power of that agent will hardly prefer to accept. The similarity of the ratio given by Mr. Neison, and that drawn from the statistics of Dr. Jackson, tend strongly to prove its correctness.

The application of these facts to the preceding is easy, and will show a result widely different from the conclusions which would be drawn, at first

view, from the statistics of the autopsies made by Dr. Jackson. Thus, out of a number of persons sufficiently great to furnish annually, if they were intemperate, thirty-five deaths from all diseases, of which five would present tubercles in the lungs, we should have, if they were temperate, only eleven deaths from all diseases, of which only 2.6 would present tubercles in the lungs. Thus it will be seen that these cases, which were supposed to furnish an argument for using alcohol to prevent phthisis, show, so far as we can depend on so small a number of observations, a directly contrary conclusion, the number of deaths from that disease being nearly twice as great among the intemperate as among individuals generally; although, when compared with the total mortality of each class, there is a relative diminution in about the same ratio.

Dr. Peters, of New York, in the *New York Medical Journal* for 1844, has given the results of the autopsies of "nearly seventy" persons dying suddenly, or found dead in the streets, "who were intemperate." In these, he did not meet with a single instance of tubercular abscess in the lungs. A small number of chalky tubercles were frequently found, and also a number of cicatrices, surrounded by scattered tubercles. These last facts would seem to imply, from the manner in which they are stated, although it is not directly so said, that the author of the paper believed them to have been cured, or to be in the process of cure, from the use of alcohol.

These facts, though related throughout in a loose and inaccurate manner, deserve a careful examination, as they are one of the few instances where the author does not indulge in theory, and seems to have none to sustain. There seems to be some doubt, however, as to whether all of them were really cases of intemperate persons. They were, many of them, instances of persons found dead in the streets. In these cases, it would seem to be difficult to substantiate the fact of intemperance with certainty. But, allowing this to have been the case with *all* of them, what are the conclusions which can legitimately be drawn from them? Certainly not that tubercular abscesses never occur in persons of intemperate habits. Within a few hours of the time of writing this, I have seen a case of extensive tubercular abscess, in both lungs, in a man who has not only been habitually intemperate for many years, but has continued in the habit up to the present time. Neither do I believe that the observations are numerous enough to enable us to come to *any* conclusion with certainty, for the following reasons: A large proportion of these cases must have been men; and, for the purposes of comparison, we shall probably not greatly err in supposing them all to have been so. As they died suddenly, there could have been no opportunity for the deposition of tubercle during their illness. Also from the nature of phthisis, deaths do not occur suddenly, or in the streets, from it.

There is no reason, then, for supposing that more cases of tubercle would be found among these seventy than among the same number of persons taken at random in the streets, if we took them of the same age (probably none of these were below 20 years of age), unless, as Dr. Peters seems to suppose, intemperance is a prophylactic against consumption. It is a matter somewhat difficult to determine how many cases of tubercular abscess we should find in seventy persons in society at large. But it may be done with an approximation to certainty. In New York, where the observations of Dr. Peters were made, there died, in the year 1854, 1254 males, of 20 years of age and upwards, of phthisis. At the same time, there were living in the city, approximately, 169,000 such persons, taking the entire population of the city, at that period, at 600,000, a number which must have been

very near the truth, and supposing them to be divided, as to age, as they were in 1850. This would give one death annually to one hundred and thirty-five such persons. The observations of Louis, the most accurate that have ever been made on the subject, show that the average duration of the disease is about twenty-one months. This would give one person *sick* of phthisis to about seventy-seven living. This result supposes that all the cases of the disease terminate fatally, a result far from the truth. With this source of error, however, enough has been said to show the fallacy of the conclusion arrived at by the author of the essay, even if the looseness with which the facts are related did not deprive them of most of their value. The duration of phthisis, however, is short, after the formation of abscesses. Probably five months would be quite as long, or longer, than the average duration of life under such circumstances. If this is allowed to be a fair representation, we should expect to find only one case of tubercular abscess among three hundred and twenty-three persons taken at random. The chances then would be more than 4 to 1 that among seventy persons we should find no case of abscess in the lungs. But individuals so far advanced in phthisis would hardly be much out of doors; neither would they be likely to continue in habits of gross intemperance to such an extent as to die in the streets. I believe it to be common to the observation of all that those who are sick to such a degree, know too well the evil effects of intemperance in general, to continue in the habit of it. Of thirty patients at the Eastern Dispensary in New York, who had been in habits of intemperance up to the time of commencement of the disease, only twelve continued the habit to the same degree as before. Of the others, eleven ceased using alcohol partially, and seven totally.

In consideration of these facts, I believe no one will conclude that the observations of Dr. Peters favour the theory that the intemperate are less liable to phthisis than others. The number of cases in which there were cicatrices, or other appearances indicative of a tendency towards health, is not given. Such appearances, at the time the paper was written, might very properly have been considered as extraordinary. But, at present, the observations of pathologists have shown them to be common. The following table, from Ancell on Tuberculosis, shows that they are "frequently found:"—

In 100 autopsies,		Rogée	found	them	.	.	.	.	51	times.
" 116	"	Boudet	"	"	.	.	.	.	61	"
" 73	"	Bennet	"	"	.	.	.	.	16	"
" 160	"	Beau	"	"	.	.	.	.	157	"
449									285	

These were deaths from other diseases than phthisis. They show that, if such appearances are to be taken as indicative of pre-existing phthisis, the disease much more frequently ends in recovery than is supposed, and that we are not justified in supposing with Dr. Peters that his cases were in process of cure from the use of alcohol.

The following facts are given by Mr. Neison, the actuary of a London insurance company, in the *Journal of the London Statistical Society*, in attempt to determine the comparative length of life of the temperate and intemperate. His conclusions upon this point have been given previously.

The diseases of which the three hundred and fifty-seven intemperate persons died, upon which his calculations are founded, are also given. Of these, forty died of phthisis (and three others of hæmoptysis, who should probably be classed with them).

These cases were reported to him by various physicians, and therefore represent, probably, with considerable accuracy, the diseases of which they really died. But the effects of their intemperance were such that only one hundred and ten temperate persons would have died in the same time out of a population sufficient to have furnished three hundred and fifty seven, had they been intemperate. And a population sufficiently large to have given forty deaths from phthisis in a given time, supposing them intemperate, would furnish only twenty-one if they were temperate.

This last calculation is based upon the supposition that all the three hundred and fifty-seven were above 20 years of age (which was the fact with four or five exceptions), and the fact that in England, in 1848, 214,000 persons died above 20 years of age, and that of these 40,000 were phthsical; that is, 214,000 : 40,000 :: 110 : 21.

There are several circumstances, however, in connection with these facts, which give a degree of uncertainty to this strongly-marked result. The intemperate are exposed to many of the recognized causes of phthisis. Some of these are their greater exposure, their less amount of earnings, and consequently poorer food and clothing, and the vitiated air they so frequently live in.

But it would hardly seem possible that these circumstances should cause half the deaths among the intemperate, which must be the case to reduce 40 to 21. On the other hand, mention will be made further on of a fact which will, perhaps, neutralize the effects of these anti-hygienic influences.

A method of determining the influence of alcohol, which would, perhaps, be as free from elements of uncertainty as any which can be attained to, I have endeavoured to present in the following statistics. In the compilation of them, I have tried to avoid mistake by excluding every case which seemed to present any uncertainty. Although no autopsies were made in the cases of death, the cause can hardly be considered as doubtful; as, however difficult the diagnosis of consumption may be in its earlier stages, it can present but little difficulty in the later.

In a small country town near the centre of New England, presenting no peculiarities of soil, climate, or other natural causes to make it differ in health from the surrounding country, I have been well acquainted for the last seventeen years. The inhabitants are almost exclusively engaged in agriculture, and are well fed, well clothed, and housed, almost without exception.

Temperance, however, has not been so popular as is generally the case in that part of the country. Of the males living within its limit during the period above indicated, above 20 years of age, 114 were intemperate and 50 temperate (using the word in the sense I have previously done); that is, considering as intemperate all those who made a daily or habitual use of intoxicating liquors. Many of these were decidedly intemperate in the usual acceptation of the term.

The form of liquor most largely used was cider, but stronger ones were by no means sparingly employed. Of those classed as temperate, most did not drink at all, while others did occasionally. Of the former, during the period indicated, 19 died of phthisis; of the latter, only 6. If the proportion had been the same with both classes we should have had 8 of the latter instead of 6. If the former class had been as healthy as the latter, there should have died, of this disease, only 14 instead of 19. Reducing them both to a decimal form, 12 per cent. of the temperate and 16.5 per cent. of the intemperate died of this disease during the period.

This result could hardly depend upon any cause but that to which it is attributed, as both classes were engaged in the same out-door occupations, and both were supplied in equal abundance with all the necessaries of life. The only apparent chance of error is in the smallness of the numbers. If, in the examination of the other sex, the same result occurs, the truth of the conclusion will be very strongly corroborated. The facts were as follows: Within the same limits, and during the same time, there were living 184 women above 20 years of age, the excess of females being caused principally by the greater emigration of males. They were all engaged in active occupations, the uniformity in this respect being even greater than among the males. But their habits as to the use of intoxicating drinks were strikingly different. Only 17 of them were intemperate, in the sense in which the word is used above, while 167 were temperate. Of the former, 3 died of phthisis; of the latter, 25. Reduced to a decimal form 18 per cent. of the intemperate and 15 per cent. of the temperate died of this disease. These results are again in favour of the temperate. The statistics of both sexes not only point to the same conclusion, but they do it with a remarkable similarity; the difference being 4.5 per cent. among the males, and 3 per cent. among the females. This coincidence, under the difference of constitution, dress, occupation, &c., of the sexes is quite striking and cannot but be regarded as strongly indicating the correctness of the conclusions arrived at. These two series of facts may be advantageously united into one view in the following manner:—

	Temperate.	Intemperate.	Deaths from phthisis among Temperate.	Intemperate.
Males	50	114	6	19
Females	167	17	25	3
Total	217	131	31	22

	Per cent of deaths among Temperate.	Intemperate.
Males	12.	16.5
Females	15.	18.
Total	13.5	17 25

There is another way in which these tables may be compared, which will be of advantage in illustrating the subject.

The degree of intemperance among the sexes in general is about as 6 to 1 in favour of the females.[1] In the town from which these data were drawn it was about as 20 to 1 in their favour. The most extensive tables show that about 10 females die of consumption to every 9 males, when the latter drink six times as much as the former. Now, when they drink twenty times as much, they ought to be still more exempt, if the use of alcohol is prophylactic in its effects as to this disease (unless we suppose that the common average of intemperance is the golden mean, to vary from which in either direction would be prejudicial). In this town, where this ratio between the sexes in regard to the use of alcohol is so different from usual, the deaths from phthisis are nearly equal in the sexes in proportion to their numbers. The inference, then, from these facts would seem to be that the use of alcohol is prejudicial, and more so when used by men than by women. May it not be that this latter fact is to be accounted for by the greater extent to which its use is carried by the men individually, as this was certainly the case in the place of which I am speaking. These statistics are

[1] This is the proportion in England; it is, probably, the same nearly in this country.

almost entirely free from those disturbing causes which give a greater or less degree of uncertainty to nearly all the other tables presented. Indeed, it is the only kind of comparison which can determine the question with accuracy. A more extended series of facts of the same kind would forever set the question at rest. Yet theory is ever so fascinating that, on this important question, none have been before given to the public.

The facts which I am about to present were obtained at the Eastern Dispensary, in New York, among a class of patients who are largely addicted to the use of alcoholic liquors. They are analogous to those last given. I questioned 67 patients affected with phthisis, in the order in which they chanced to present themselves for treatment. Of these, I found that 36 had been accustomed to the regular use of alcohol, while 31 were habitually temperate. In order to obtain a standard by which to determine whether a greater or less proportion of these phthisical patients were intemperate than obtains among the class of people in general, who resort to such institutions for medical treatment, I questioned an equal number of other patients affected by diseases not supposed to be at all influenced by the use of alcohol (principally pleurisy, bronchitis, rheumatism, and diseases of the heart). These were also taken in the order they presented themselves, and were divided as to sex precisely as the former. Of these latter 25 were temperate and 42 intemperate. Both of these series of cases may be advantageously presented in a tabular form in the following manner, separating the sexes:—

MALES.	With phthisis.	With other diseases.	FEMALES.	With phthisis.	With other diseases.
Temperate	6	13	Temperate	25	29
Intemperate	25	18	Intemperate	11	7

Here it will be seen that the statistics of each sex give the same result, and in a degree nearly the same. The males, however, were somewhat more unfavourably affected by the use of alcohol than the females (a result arrived at in one or two instances before, and which I attribute to the greater extent to which they use alcohol). The fact that the statistics of both sexes point in the same direction cannot but be regarded as strengthening the probability of their correctness. I have no doubt as to the general accuracy of the accounts given by the patients as to their habits in regard to the use of alcohol. But any attempt at deception on their part would be as likely to occur among those affected by other diseases as by phthisis; so that in a comparison of results like that above, the errors in this respect, if any existed, would probably neutralize each other.

g. In persons addicted to any habit which we suspect to favour the production of tubercles in the lungs, we should expect the disease to occur at an earlier age than those under more favourable circumstances. The converse of this also we should expect to be true; that if they were attacked later in life the habit must be prophylactic in its effects. This method of determining the question under discussion I attempted to apply to the patients at the Eastern Dispensary, mentioned in the last section. The average age of the temperate who were sick with phthisis was 34.1 years; the average age of the intemperate 40.1 years. The following table presents the same facts, separating the sexes:—

	Temperate.	Intemperate.
Males	34.	40.8
Females	34.2	38.3
Average of both	34.1	40.1

This is a result that I did not expect would occur, for its indications are directly the opposite of most of the facts already adduced. The average age of the temperate was six years less than that of the intemperate, and nearly the same result is indicated by a separate examination of each sex. Several circumstances are to be taken into account in determining the correctness of this result. Most of these patients were of Irish nativity, and consequently were not very sure as to their exact age, usually understating it somewhat. Another, is the fact that persons of a naturally feeble constitution are less apt to fall into habits of intemperance than those of an opposite physical make. We should naturally expect the former to be attacked with the disease at an earlier age than those of a more robust form. Another still is, that many persons fall into habits of intoxication after the period at which phthisis is most apt to occur, while very few who are intemperate in their youth cease the use of alcohol in after-life. In other words, there is a *greater* proportion of intemperate persons at that period of life when the proclivity to phthisis is *least*, and *vice versâ*. It is difficult, if not impossible, to determine the exact degree to which these facts would affect the above table. It is certain, however, that they would considerably reduce its value as indicating the prophylactic virtues of alcohol in phthisis, and it is not improbable that they might entirely reverse the conclusions to be drawn from it.

There is one circumstance which, I believe, will affect somewhat all the statistics presented in connection with this division of the subject (the effects of alcohol on those predisposed to phthisis). The observation of all will, probably, bear me out in the opinion that those who have naturally a vigourous constitution, broad shoulders, well-developed muscular system, and strong digestive powers, if they have not a stronger appetite for alcoholic liquors than those of an opposite physical conformation, at least indulge in them more freely. Those who are naturally of a feeble constitution, or in a low state of health, or inclined to pulmonary disease, would be more likely to abstain from them, from prudential motives, if not from a natural aversion to their stimulus.

The same fact shows itself in a comparison of the sexes; females, with a naturally less robust health (and probably a stronger proclivity to phthisis), being less inclined to the use of intoxicating agents than the other sex. Of course, the habit is formed, in all cases, after the constitution is established. In all the previous instances, if this opinion be true, temperance will appear less favourable to health than it really is, so far as this disease is concerned. But I prefer not to leave a question of this importance to a vague impression, however strong or common it may be, when it is possible to substantiate it by facts.

In the town previously referred to, of one hundred and fourteen intemperate men, seventeen were of such a constitution and physical form, that they would be thought more predisposed to phthisis than others. Of fifty temperate persons, twelve presented the same feeble constitution.[1] This gives 15 per cent. of the intemperate, and 24 per cent. of the temperate. It should be borne in mind that this was not an acquired state from the use of alcohol, but was original. A difference so marked as this could hardly depend upon the small number of cases; while the fact, if such it be, shows the difficulty of arriving at the truth in such a question as that we are discussing. It also shows that statistics ought to point clearly and strongly

[1] In such a matter, the judgment, of course, has to be exercised as to the constitution of individuals; but I have endeavoured to exercise it without bias.

to a freedom from phthisis among the intemperate before it can be accepted as a determined fact. Not only has this not proved to be the case, but nearly all I have been able to collect, when freed from sources of error, point to an opposite conclusion. When this conclusion is strengthened by the considerations last presented, *it seems to me almost conclusive that the use of alcohol not only has no power to defend those predisposed to phthisis from its attacks, but would, with little doubt, change the predisposition into actual disease.*

In connection with this opinion, as to the prophylactic influence of alcohol in this disease, I cannot forbear saying a few words upon the moral aspects of the case. It is true that this is not the view proposed in the question for discussion. It is true, also, that the evil effects resulting from the habitual use of alcohol do not affect the fact of its influence upon this disease, whether that influence be favorable or not. In a purely scientific question this ought not to influence our opinion. But theories give origin to practice, and in this way have a bearing upon the well-being of the community. We ought therefore to demand a rigid proof of the truth of the theory before putting it in practice. When phthisis has actually commenced, it might, perhaps, be prudent to prescribe the use of alcohol with only a *probability* of advantage resulting from it. But with persons who are still in health, I believe the influence of such an agent as alcohol would be most *funeste.* The injury resulting from it would probably far outweigh any prophylactic power it could possibly possess. In this view of the case, I am happy in having arrived at the conclusion, uninfluenced, however, by moral considerations, that it has no virtues as a preventive of this much dreaded disease.

Concerning the second part of the question—the effects of the use of alcohol upon cases where tubercle has already been deposited—it might perhaps be considered sufficient to have shown that this agent probably favours the approaches of tuberculosis in the healthy, to argue that it could be of no very great benefit in those who are actually diseased. This inference would be very strong with all, except those blinded by Hahnemannic theories. If it should prove that the inference was not correct, it would certainly appear to be an argument in favour of that absurd system. But I believe it can be shown to be correct by actual observation of facts, which, if judiciously and fairly presented, are ever more convincing than mere deductions. That in such cases alcohol has no *marked* remedial value, I am as well convinced, from my observations, as I am of any fact in therapeutics. I am too much accustomed, every day, to seeing cases of phthisis, among the lower orders in this city, which have not only had their origin at the same time that intoxicating agents were being used regularly to excess, but have pursued their usual downward course to a fatal termination, notwithstanding the same habits were kept up, to have faith in their being able to cure such cases. These patients, often too unwilling to pursue the course recommended by physicians in other respects, frequently save us the trouble of experimenting with alcohol by obstinately adhering to its use, whether we will or no.

The following cases of phthisis presented themselves at the Eastern Dispensary of New York within a few weeks of each other. They are a part of those which have been already referred to. In all of them, this agent had been more or less largely used during the whole course of the disease. The duration of such cases is always difficult to be ascertained with accu-

racy. But such patients rarely present themselves till the disease is considerably advanced. Without doubt, all of them had been using alcohol long enough to have effected a cure, if it ever could be done by such a medicine. I here present the duration of these cases as nearly as it could be ascertained from the patients themselves, dating from the commencement of the cough :—

Sex.	Duration.	Sex.	Duration.
Male	2 months.	Female	2 months.
"	1 year.	"	4 months.
"	2 years.	"	2 years.
"	1 year.	"	8 months.
"	1 month.	"	6 months.
"	2½ years.		
"	2 years.		
"	2 years.		
"	1 year.		
"	5 years.		
"	6 months.		
"	15 months.		
"	2½ years.		
"	9 months.		

The duration of these cases is seen to vary from one month to five years, most of them being sufficiently long to have afforded the remedy ample scope for action,[1] if it has any. Yet, as they all presented themselves now for the first time, it may be inferred that they considered themselves worse than at any previous period. The physical signs varied from those of a slight and recent deposit of tubercle to those of extensive vomicæ. There was also a general, but not regular, concordance between the duration of the disease and the gravity of the lesions presented, those in whom the disease had existed longest presenting the most advanced stage. In none of these cases, according to the accounts of the patients themselves, was there any decided change for the better; but the disease had pursued its usual course, with temporary remissions in severity, as is customary.

In order to determine whether the disease is more or less rapid in these cases than in those where alcohol was not used, I present the following cases of that kind for comparison. They were collected at the same time and place as the others, and had either ceased using alcohol, on being taken sick, or had never used it at all.

Sex.	Duration.	Sex.	Duration
Male	5 months.	Female	2 years.
"	8 years.	"	6 months.
"	6 months.	"	24 months.
"	2 years.	"	12 months.
"	4 years.	"	2 years.
"	2 years.	"	10 years.
"	10 years.	"	12 months.
		"	2 years.
		"	4 months.
		"	15 months.
		"	10 months.
		"	15 months.
		"	5 years.

In persons of so low a degree of mental cultivation as those who usually present themselves at eleemosynary institutions of this kind, we could not expect their statements, as to the period of access of the disease, to be very

[1] Commencing, as the use of alcohol did, before the disease appeared.

accurate, unless it were very recent. That this is the case with both these tables might be inferred from an examination of them. With these facts in view, we should not place any great reliance upon the actual duration of the disease as given by the patients themselves. But it is not here the actual, but the comparative duration of the two classes that we are seeking; and in this comparison we shall, to a great degree, be freed from this source of error, as it is likely to be as great with one class as the other. It is true, too, that it is not the total duration of the disease we are comparing, but only that to a particular point, viz., that degree of sickness which induces a visit to the dispensary for relief. In so large a number of cases, we may suppose this point of the disease to be nearly the same in those composing each table. With these preliminaries to show that I do not consider the conclusions we shall arrive at perfectly unobjectionable, we will compare the two tables. The average duration of the disease, up to the time the intemperate presented themselves for treatment, was about sixteen months. Among those who did *not* use alcohol during the course of the disease it was 33.6 months. We thus see that the former had been sick only one-half as long as the latter when they deemed themselves sick enough to require treatment. After the former had been sick only sixteen months, they appeared, so far as I could judge, to have arrived at the same period of the disease as the latter at the end of thirty-three months. At any rate, I am very sure that few of them would have lived to make up the difference already existing in the duration of the disease. Louis (op. cit.) has shown that the average duration of the disease in Paris is about twenty-one months. The average duration of these cases had already been about twenty-five months, showing that the patients had over-stated the time they had been sick. There is no reason, however, why the intemperate should have been more accurate in this particular than the temperate. In these—far from living long enough to make up the difference between them and the temperate—I think few would have lived to make up the difference to Louis's average. On the other hand, the temperate, according to their own statement, had already lived a year beyond that period. We can hardly suppose them to have made so gross an error as this in the duration of their illness. On the whole, I think this must be considered as a strong argument in favour of the position that the use of alcohol is not only prejudicial to those predisposed to phthisis, but in a still greater degree to those already attacked by it. This is what we should suppose, *à priori*, would be the case.

It is difficult, indeed, to conceive how the case could be otherwise. For if tubercle has gained a foothold with greater ease, under the use of alcohol, all analogy would cause us to believe it would still exercise the same influence in extending the deposit of that substance, if it did not increase the rapidity with which it undergoes its usual changes. But suppose, for an instant, that the influence of alcohol were favourable on those predisposed to the disease, and, also, that its therapeutic effects were valuable. In a person continually using it, it is difficult to see how tubercle could gain any foothold. For then the remedy would be on the spot at the moment when the malady was commencing, and was, consequently, in the circumstances most favourable for cure. Yet cases of phthisis, under such circumstances, continually occur in the observation of every one; and, in those related in this essay, they occurred more often than among the temperate. Among the lower classes of this city the statistics already given show that more than half (36 against 31) use alcohol throughout the dis-

ease, probably to at least as great an extent as it would ever be recommended as a medicine. And this is more marked among the males, more than four-fifths using it. Yet the deaths from this disease here, among the males, are regularly more numerous than among the females. I should not, probably, overstate the facts if I said that of the 1,500 males dying of phthisis each year in New York, 1,000 were attacked with the disease in spite of the reputed prophylactic virtues of alcohol, and died of it in spite of its vaunted curative powers. How can it be called a *medicine* (for this disease) in the face of such facts?

In order to determine the effects of a regular and moderate use of alcohol upon those already the subjects of phthisis I have deemed it justifiable to have recourse to experiment, and accordingly I selected several cases from the Eastern Dispensary, in different stages of the complaint, in persons some of whom were still using alcohol in some form, according to custom, while others had given up its use, and others still, had never used it. The form of the medicine used in all these cases was *whiskey*, not only because it is more free from various deleterious and medicinal substances than most other forms of liquor, but, also, because it is that form which has been especially recommended in such cases. The doses varied from half an ounce to two ounces three times a day. In most of the cases it was the only medicine given during the time the cases were under treatment; in a few, some palliatives of particular symptoms were exhibited which could not have interfered with the result of the experiment. (I commenced with a much more numerous list of cases than I give here; those who have ever attempted such an experiment on such persons will easily imagine the reasons which reduced the number of my cases.)

These cases were under observation three months (except when otherwise stated), during the spring—a period when patients affected with this disease generally exhibit a temporary amelioration of symptoms—so that judging of the effects of a remedy exhibited during this season we should, probably, form opinions of its action, *at least as favourable* as truth would warrant.

As being one of the best means of forming a judgment of the effects of alcohol in this malady, and, at the same time one capable of arrangement into a statistical form without any opportunity for preconceived opinions of the observer to intrude themselves, I have chosen the weight of the patients taken at different periods. First, at the commencement of treatment, afterwards, in general, at periods of a month. These weights were taken with care upon the same scales, the patients having on the same clothing at each successive period. The physical signs are given at the commencement and termination of treatment from personal observation. The cough, diarrhœa, hectic, and any subjective symptoms, from the reports of the patients themselves. During the whole time of treatment they were placed under as favourable hygienic conditions as possible, and a diet recommended, consisting of as much fat meat as could be digested. No cod-liver oil was exhibited in any case, nor had any been taken for some time previously.

With these preliminaries, I give the cases as they stand upon my note-book; the observations being made in every instance upon the spot.

Case No. 1.—A gunmaker, aged 40. Has always been a regular, but not excessive drinker. Two months ago he was attacked with severe hæmoptysis after a debauch, lasting several days. He was considerably reduced by this, and left off the use of alcohol till he took it by my recommendation. His physical signs were those of a moderate deposit of tubercle

in the upper half of the left lung, with commencing softening. (As this patient remained under treatment only a short time I shall give no further particulars.) He commenced taking whiskey, two ounces, three times a day, and the second day was attacked again by hæmoptysis, as after the debauch previously. The whiskey was stopped till this had ceased, after which it was renewed in a much smaller quantity. But symptoms of recurring hæmoptysis and disordered digestion induced the patient to refuse to continue its use further. He was accordingly put upon other treatment.

The recurrence of hæmoptysis in this case appears as though it was caused by the whiskey. It might be only a coincidence, but it could have no influence in restraining it, judging from this case.

Case No. 2.—A hatter, aged 40 years. Had cough a year, and was emaciated somewhat. The physical signs are those of extensive deposits of tubercle in the tops of both lungs, with a small vomica in the left. He had hæmoptysis three months ago, and hectic and severe cough at the present time. He had always been an intemperate man, and still continues in the same habits. He took two ounces of whiskey three times a day, a quantity considerably less than he had been accustomed to.

Weight at commencement of treatment	146 lbs.
" " the end of 1 month	146 "
" " " 2 months	152 "

He had a poor appetite and digestion throughout the whole period of treatment. Hectic and night-sweats also continued, unaffected by the remedy. After using the whiskey a fortnight he had an attack of hæmoptysis. Cough rather improved and expectoration less. The physical signs were much the same, after two months' treatment, as before.

Case No. 3.—A musician, aged 22 years. Hæmoptysis five months ago, with cough ever since. Had always been temperate. Physical signs of softening tubercles in top of left lung, with a commencing deposit in the right. Has night-sweats and severe cough. Digestion good. Prescribed whiskey, one ounce three times a day.

Weight at commencement of treatment	116 lbs.
" " the end of 1 month	113 "
" " " 2 months	114 "
" " " 3 "	112 "

Night-sweats continued without change during the whole treatment. Cough improved, according to the patient's account, at each visit. Appetite and digestion continued good. The physical signs at the end of three months showed nearly as extensive a deposit of tubercle in the right lung as in the left. They were also softening in the former.

Case No. 4.—A labourer, aged 59 years. Always intemperate, and had continued in the habit up to the present time. Taken with cough a year ago. Never had hæmoptysis. Tubercles in the tops of both lungs, principally in the left, in which they were softening. Cough severe; digestion bad; bowels quite loose for some months. Prescribed whiskey, one ounce three times a day; but the patient must have considerably exceeded this amount, as I found him drunk several times on making my visits.

Weight at commencement	130 lbs.
" " 1 month	130 "
" " 2 months	128 "
" " 3 "	128 "

During the course of treatment the physical signs and sputa showed that a cavity had formed in the top of the left lung, though he continually reported his cough better. The bowels have been regular for the last month. During the same time he has been troubled with hectic fever and night-sweats. Appetite and digestion continued bad throughout the period of treatment. At the commencement he went out daily, but has spent the last month in bed nearly all the time.

Case No. 5.—A shoemaker, aged 29 years. Had always been a very intemperate man, and, although in the last stages of phthisis, continued the use of whiskey to a much larger extent than I prescribed it. Had cough a year, and several attacks of hæmoptysis. Was much emaciated, and so feeble as not to leave the house; consequently he was not weighed. Extensive deposits of tubercle in both lungs with cavities. Whiskey was prescribed, one ounce three times a day, but he really far exceeded this allowance, as he had done for a long time previously. This patient gradually sank and died two months after coming into my hands. No post-mortem examination was allowed. One feature in this case deserves especial mention as bearing upon the effects of alcohol. Just before I saw him he began to have a tubercular enlargement of one of the glands of the neck, and before he died tubercular disease of the left ankle showed itself. This was rapidly progressing at the time of his death. No case that I have seen shows so strongly the powerlessness of alcohol in preventing or arresting a deposit of tubercle as this. The patient was a drunkard in the common acceptation of the term, and continued in the excessive use of alcohol to his death; yet at three distinct periods tubercle was deposited in different parts. In the ankle, when it occurred under my observation, it came on with great rapidity.

Case No. 6.—A carpenter, aged 47 years. Had suffered from a fracture of his ribs in youth, which considerably diminished the dimensions and mobility of his chest. He had been intemperate up to the time he came into my hands, with the exception of the last few weeks. Has had cough for two years. No hæmoptysis; has emaciated considerably. Tubercles in the tops of both lungs, principally the right. There are no physical signs of a vomica, although he is expectorating pus very copiously streaked with blood. Appetite and digestion bad. Cough very severe, with hectic. Prescribed half an ounce of whiskey three times a day, which amount he did not exceed.

Weight at commencement of treatment	134 lbs.
" " 1 month	130 "
" " 2 months	128 "
" " 3 "	126 "

The physical signs of a cavity in the right lung gradually became distinct, and are very evident at the present time. Notwithstanding this, however, his other symptoms improved so that, from keeping his bed, he went to work. Cough much less. Appetite improved, and bowels regular, but still has regular hectic. This delusive amendment, I believe, is not uncommon after the immediate irritation caused by the rupture of a tubercular abscess has passed away. I consider the amendment to have been delusive in this case because it was not accompanied by a corresponding improvement of the physical condition.

Case No. 7.—A carpenter, aged 58 years. Has always been intemperate up to the period of treatment. Cough commenced two years ago; no hæmoptysis. Softening tubercles in the tops of both lungs, about equally

distributed. No diarrhœa nor hectic. Digestion bad, and somewhat emaciated.

Weight at commencement of treatment	107 lbs.
" " 1 month	105 "
" " 2 months	100 "
" " 3 "	100 "

This case was quite a chronic one, and, except in a gradual diminution of weight, there was no appreciable change of condition. The cough remained hard, the digestion bad, and the bowels regular.

These seven cases were males; the remainder were females. The preponderance in number of males was merely accidental, as they chanced to present themselves in the way they are reported here.

Case No. 8.—Housekeeper, aged 36 years. Had always been perfectly temperate. Was attacked with hæmoptysis two years ago, and has had cough over since. Tubercles in the tops of both lungs, most in the right. Cough not very severe; appetite and digestion bad; bowels costive. Prescribed one ounce of whiskey three times a day.

Weight at commencement of treatment	131 lbs.
" " 1 month	130 "
" " 2 months	129 "
" " 3 "	128 "

This patient had not emaciated any before commencing the treatment, and she still continues in good condition as to flesh. At the termination of the treatment the physical signs showed a decided advance of the tubercle; the cough was also more severe. Otherwise the symptoms remained the same. (This patient attributed the change for the worse in her condition, which she herself recognized, to the depressing effect of family troubles.)

Case No. 9.—A housekeeper, aged 39 years. Has always been a moderate drinker. Has had cough for two months; no hæmoptysis. Appetite and digestion bad. Bowels regular; no hectic. A moderate deposit of tubercle in the top of the right lung.

Weight at commencement of treatment	122 lbs.
" " 1 month	122 "
" " 2 months	122 "
" " 3 "	122 "

At the termination of the experiment her physical signs were nearly the same; the cough improved; the bowels regular; and the digestion improved. The patient attributed the amendment in her condition to the ounce and a half of whiskey she took each day. In this opinion I cannot concur, as it was very nearly the same amount she had been accustomed to take daily for years.

These cases are not so numerous as I could have wished, and a continuation of the treatment for a longer time would have given them greater weight in forming an opinion as to the effects of the treatment. Still it appears to me that important indications can be drawn from them. At the same time we should bear in mind the liability to error from the peculiarly changeable character of the disease, and the proclivity of patients to state their symptoms as improving after commencing a new course of treatment. The following table will show the weights of the patients at the different times they were taken, the first column being that at the commencement of the treatment, the subsequent ones at interval of a month:—

Case No. 1				
" 2	146	146	152	
" 3	116	113	114	112
" 4	130	130	128	128
" 5				
" 6	134	130	128	126
" 7	107	105	100	100
" 8	131	130	129	128
" 9	122	122	122	122

An examination of this table shows that in five of the seven cases where the weight was noted there was a nearly regular and progressive diminution; in one it was stationary, and in one there was an increase.

So far as this table goes, and I regard its indications as among the most important, it seems to me to be decidedly adverse to the opinion that the effects of alcohol are good in this disease. The following table exhibits the indications of the physical signs as nearly as it can be done in such a mode:—

No. 1	No. 4 Worse.	No. 7 No change.
" 2 No change.	" 5	" 8 Worse.
" 3 Worse.	" 6 "	" 9 No change.

In four of the seven cases which could properly come into this comparison there was a change for the worse. In not a single one had they improved. In Nos. 4 and 6, cavities formed during the course of treatment. Hæmoptysis occurred in two of the cases during the treatment.

The cough, according to the reports of the patients themselves, upon whom it is necessary to depend, was better in five cases; not changed in one, and worse in one. This was the only symptom which appeared to improve in a majority of the cases; and, as in these, it was not accompanied by a corresponding improvement in other respects, it appears to me probable that the judgment of the patients was at fault.

The remainder of the symptoms, generally, did not change during the treatment, those that were good remaining so, and *vice versâ*.

On the whole, it appears to me that the indications to be drawn from these cases are decidedly adverse to the use of alcohol as a therapeutic agent.

It will thus be seen that the conclusions we should have drawn from the already proved effects of alcohol upon the healthy, in regard to its action upon those who are phthisical, are borne out by facts.

I am well aware that the statistics presented in this essay are by no means sufficiently extensive to set the question at rest. But after a careful consideration of the facts presented by others, and also from the results of the observations here presented, I think the following general conclusions may be regarded as probably true:—

1. The opinion so largely prevailing as to the effects of the use of alcoholic liquors, viz., that they have a marked influence in preventing the deposition of tubercle, is destitute of any solid foundation.

2. On the contrary their use appears rather to predispose to tubercular deposition.

3. Where tubercle already exists alcohol has no obvious effect in modifying the usual course run by that substance.

4. Neither does it mitigate, in any considerable degree, the morbid effects of tubercle upon the system, in any stage of the disease.

REVIEWS.

Art. XII.—*On Consumption: its Nature, Symptoms, and Treatment. An Essay to which was awarded the Fothergillian Gold Medal of the Medical Society of London.* By Richard Payne Cotton, M. D., Fellow of the Royal College of Physicians, London; Physician to the Hospital for Consumption and Diseases of the Chest, Brompton. Second edition. London: John Churchill, New Burlington St., 1858. 8vo. pp. 302.

The Hygienic Treatment of Pulmonary Consumption. By Benjamin W. Richardson, M. D., Licentiate of the Royal College of Physicians; Physician to the Royal Infirmary for Diseases of the Chest, and to the Margaret Street Dispensary for Consumption, etc. etc. London: John Churchill, 1857. 8vo. pp. 115.

"In England and Wales there were, during the year 1855, no less than 52,289 deaths from consumption. The population during the same year was estimated at 18,786,914; and the deaths, from all causes, amounted to 425,703. One person, therefore, in every 359 fell, during the year, a victim to this disease; and the deaths from consumption amounted to nearly one-eighth of the total number of deaths. It may be stated that in England and Wales more than 143 persons die daily of consumption, being very nearly at the rate of six deaths in every hour, or one in every ten minutes."

The numerical facts contained in this extract from the first chapter of Dr. Cotton's work, need no aid from rhetoric in order to impress the importance of the subject of pulmonary consumption. These statistics relate, it is true, only to the British Islands; but everywhere over the known habitable globe, consumption prevails. The difference in the mortality from this disease in different countries and climates, is far less than has been heretofore supposed. There are few, if any, parts of the world in which, if epidemic and endemic diseases are excluded, the deaths from consumption do not exceed those from any other affection. The study of this disease in its scientific and practical relations is rendered important by its prevalence and fatality. Its importance is the greater the more the disease admits of prevention and cure. And with respect to these objects of the study of the disease, the opinions of medical men, within the past few years, have undergone an important change. It is superfluous at the present moment to discuss the curability of tuberculosis of the lungs. Recovery may take place not only in the early stage, but after the progress of the disease has involved considerable damage to the respiratory organs. The prevention of the disease is less demonstrable, but there is no room for doubting that judicious management may arrest its development as well as its progress. In view of what medical science and art may hope hereafter to accomplish in the way of the prophylaxis and treatment of this universally prevalent and most fatal of diseases, pulmonary consumption may be said emphatically to be *the* important subject at this time pertaining to medicine.

The two works whose title pages head this article, have been written with direct reference to the preventive and remedial treatment of pulmonary

consumption. Dr. Cotton considers the symptoms, nature, etc., of the disease—devoting to these portions of the work a little more space than to the treatment. But the practical value of the work consists of the views presented in the portion devoted to the treatment. Dr. Richardson's treatise relates specially and entirely to the treatment, and particularly to hygienic measures. It is, however, impossible to shut out of view the probable nature of the disease, or, in other words, its pathology, in treating of its prevention and cure; and we are not, therefore, left to guess the views of Dr. Richardson with respect to theoretical points which must, to a greater or less extent, be the basis of practice. We design in this paper to sketch the general plan of the treatment of pulmonary consumption which accords best with our present knowledge, and the notions of the most judicious practitioners. In so doing we shall notice the practical opinions held by the authors just named. Nowhere in practical medicine has the change in practice, within a few years, been more radical than in the treatment of consumption. This has been, in part, the result of a corresponding change in pathological views, and it is partly attributable to the fruits of clinical observation. The effect on the mortality from phthisis is not numerically determined, but it is unquestionable that recovery from the disease is an event less rare of late than a few years ago. For ourselves, we cannot doubt that an extension of the pathological and practical views now entertained, and their more general diffusion, are destined to accomplish much toward the prevention and cure of pulmonary consumption.

We have said that theoretical points relating to the pathology of tubercle, must, to a greater or less extent, be the basis of practice. Of the points involved in the plan of treatment now in vogue, the most important is the dependence of the tuberculous deposit on a special morbid condition, or a peculiar cachexia, which precedes any pulmonary affection. With respect to this point, Dr. Cotton says:—

"The term phthisis, or consumption, is now universally and exclusively applied to a peculiar and obscure condition of the whole system, in which, instead of the healthy nutritive material required for the growth and reparation of the body, there is produced in the blood a morbid substance which, sooner or later, appears as *tubercle* or *tuberculous matter* in the pulmonary structures."

We might criticize the use of the word *substance* in this quotation, since it is not certain that the tuberculous matter exists, as such, in the blood. The immediate antecedent morbid condition, or cachexia, is probably seated in the blood, but whether tubercle is preformed and deposited in the lungs by a kind of eliminative effort, or whether different elements of the deposit are thrown off separately and combined in the act of exudation, are questions which our present knowledge does not enable us to answer. Practically, the doctrine that tubercle is exuded, not as a result exclusively of pulmonary inflammation or any other local process, is immensely important. This is virtually saying that pulmonary tuberculosis is not primarily and essentially an affection of the lungs; and hence, the treatment of the affection, to be rational and effective, must be addressed to other than the local conditions connected with the deposit.

Dr. Cotton limits the application of the terms phthisis and consumption to the antecedent morbid condition, or cachexia, which stands in immediate relation to the deposit of tubercle. This condition must exist for a greater or less period prior to the occurrence of the deposit; and until the deposit occurs, the patient cannot be considered as affected with tubercle. We quote the author's language on this point:—

"At the first onset of consumption, the lungs are not necessarily tubercular. It is true that, before the pulmonary structures have become implicated, we often fail in detecting the disease, the premonitory symptoms having been too short or obscure to attract observation; in a fair number of cases, however, these are sufficiently obvious, and, probably, in none are they entirely wanting. The term *phthisis* or *consumption* is alone applicable to that peculiar morbid condition of which I have spoken in the preceding chapter, and which involves, amongst other consequences, a tubercular state of some of the internal organs; whilst *tubercle* expresses the effect of such a condition—the one being related to the other in exactly the same way that saccharine matter is to diabetes, and lithate of soda to gout."

This distinction is theoretically just, yet it very rarely admits of being carried practically into diagnosis. The deposit of tubercle seldom occurs, for the first time, while patients are under medical observation. It has already occurred, in the vast majority of cases, when patients present themselves for medical treatment. If there be appreciable symptoms which denote the morbid condition constituting the disease, before the exudation takes place, their importance is sufficiently obvious; for, certainly, it is highly desirable to make the diagnosis, if possible, at this stage. The author indicates a group of symptoms which, in certain cases, mark the preliminary stage. They are not, however, either single or combined, very distinctive. Loss of weight from no other obvious cause, pallor of the countenance and deficient strength in a person between the ages of twenty and thirty, and especially if the person be of a tuberculous parentage, should always excite strong suspicion of danger, if the deposit have not already taken place. When these symptoms of the tuberculous cachexia are marked, the physical signs generally show that a deposit has already taken place. But there are exceptions to this rule, and in these exceptional instances the deposit may subsequently take place, or, as may be rationally conjectured, this occurrence is prevented by proper management.

Dr. Cotton brings out in connection with the pathological distinction just referred to, a truth which has not been sufficiently considered by medical writers, viz: the want of relation between the local affection and the general symptoms. He says:—

"The truly consumptive symptoms are never dependent upon the amount or even the condition of the tubercular deposit, but upon the degree of functional disorder under which it has been produced or altered; and of this no better proof can be given than the fact that cases often present themselves in which, although the tubercle is as yet unsoftened, *consumption* is more marked, and life apparently more threatened, than in other cases where the pulmonary structures are broken down into cavities."

Clinical observation abundantly verifies the correctness of this statement.

The treatment of consumption, based on the pathological doctrine which has been stated, has reference to an unknown morbid condition, probably seated in the blood, the proximate cause of the exudation of tubercle. This condition prevented or removed, the deposit of tubercle does not occur, or, if it have occurred, there remains but the local pulmonary affection to be recovered from. Now, on what remedy or remedies is the practitioner to rely for the prevention and removal of this condition? Dr. Cotton and Dr. Richardson do not undertake to answer this question. These authors do not recognize any special remedy or remedies for consumption. Cod-liver oil they deem serviceable, as a food, in the cases in which it is taken without great repugnance and well borne by the stomach. The hypophosphites are not noticed. These, although in some cases useful,

have been already shown by clinical observation to have no claim to the character of a specific remedy. To say that no remedy has as yet been ascertained to have a special efficacy in consumption, is by no means saying that remedies are not useful. Various tonics are often serviceable in no small degree; and we are glad to see that both authors attach considerable value to the use of opium to allay cough and other effects of the local affection. Of course, palliative medication is important; night perspirations, diarrhœa, and other symptoms are to be relieved. If there be any article in the materia medica which may be considered as in any measure specially efficacious, that is, exerting a remedial effect on the morbid condition or cachexia, on which the deposit of tubercle depends, we believe it to be alcohol. The effects of the abuse of alcohol, terrible as these are, since they involve destruction of the mental and moral, as well as the physical constitution, are antagonistical to the deposit of tubercle; and clinical experience shows a decided influence of alcohol as a remedy in arresting and retarding tuberculous disease. The extent of this influence, and the circumstances which in individual cases on the one hand favour, and on the other hand obstruct it, are yet to be determined. In neither of the works under reviewal is sufficient importance, as it seems to us, attached to the use of this remedy, although it enters into the treatment inculcated in both. A grave question is undoubtedly connected with the anti-tuberculous influence of alcohol, viz: How far its use as a remedy for tuberculosis may tend to encourage intemperance. We are not disposed to overlook or to depreciate the gravity of this question. We are free to admit that, as an alternative, intemperance has to our mind more terrors than tuberculosis. Thus far our own experience, which has been considerable, has not afforded an instance of intemperate habits formed by the use of spirits remedially in cases of tuberculosis. We have heard of such instances, but the advice of the physician is sometimes made a convenient pretext for indulgence of an appetite which he has had no hand in producing. To prescribe an alcoholic remedy is not to sanction the use of spirituous beverages as an element of dissipation or of social enjoyment. Prescribed as a remedy, it is to be taken like other remedies, not at public places, nor at the festive board, nor with boon companions. Moreover, as a remedy for tuberculosis, it is to be taken within the limits of any appreciable excitation of the nervous system. Tuberculous patients sometimes bear large quantities without being sensible of any of the characteristic exhilaration; and the latter, when produced, is evidence that the proper bounds have been passed. Regulated with every precaution, it is probable that in some persons constituted with a proclivity to carry the use of alcoholic stimulants to excess, they cannot safely be employed. It is to be hoped that the objection on the score of danger of intemperance applies only to those with whom a craving for stimulants is an idiosyncrasy. But with reference to this remedy, a correct diagnosis of tuberculous disease is vastly important. The practitioner may well tremble at the responsibility of advising it, if he be guided in his fears of phthisis by the apprehensions of the patient. It is a dangerous remedy for the melancholic and hypochondriac, and cases are common enough in which, under these circumstances, patients fancy that they are either tuberculous or in danger of consumption. Here is a contingent consideration showing the value of those means of investigation which generally enable the diagnostician to decide positively whether tubercle be or be not present; we allude to the methods of physical exploration.

By the authors of the works whose title pages have served as a text for

these remarks, hygienic treatment is mainly relied upon for the prevention and cure of consumption. We cannot doubt that what has been accomplished within late years in this province of practical medicine, has been chiefly owing to a radical change in the hygienic measures employed, and their substitution for an injurious medication. Much is to be expected in addition to what has been already accomplished. The prevention of phthisis offers a tempting field for medical philanthropy. If the mortality from this disease is ever to be greatly reduced, it must be by prevention rather than cure. The probabilities of recovery may become much greater than they now are, but it can hardly be expected that phthisis can be divested of great danger. How far the disease is preventable by sanitary precautions can only be conjectured. We should be better prepared to judge beforehand if we knew what importance, as regards the causation of the disease, belongs to the various modes in which the laws of health are violated. That an innate predisposition or diathesis is often involved cannot be doubted, but that even in these cases the development of the cachexia may be on the one hand prevented, and on the other hand that it is often favoured by extrinsic circumstances, is more than probable. Statistical researches show that a sedentary life, in-door occupations, deficiency of food and light, etc., contribute to the fatality from consumption. There is scope for continued investigation of the parts which the various deleterious agencies incident to the atmosphere, diet, regimen, abuse of the faculties of body and mind, and other sources of disorder, respectively play in the etiology of this disease. And there is abundant room for the popular diffusion of the knowledge on this subject which has been already acquired, and for those reforms and improvements which can never be fully carried out so long as a large portion of even the intelligent public are so little acquainted with, and have so little interest in sanitary science. The discussion of this subject would be here out of place. Dr. Richardson's treatise is to be particularly commended to the medical reader interested in hygienic measures relating to the atmosphere and ventilation. But before passing from preventive to notice curative measures of hygiene, we wish to say a few words with regard to dietetics.

It has been one of the freaks of modern refinement and modern fanaticism to degrade good living and stigmatize it as not only hurtful, but a sinful indulgence. The over-delicate lady, together with the poetaster and the sentimentalist of either sex, are ashamed to eat well, that is, to consume habitually a liberal allowance of substantial food. It is considered as gross, vulgar and oppressive to the finer qualities of our nature. Great simplicity and paucity of diet by many appear to be regarded as required, not only by good taste, but by a proper sense of moral and religious duty. The evils of eating have been a favourite theme for the preacher, the moralist and the pseudo-physiologist. Nor has the medical profession been free from participation in extravagant notions on this subject. Far from it. It has been customary to trace a large share of diseases to the stomach. Low diet has been deemed indispensable to the management of most affections, and not unfrequently this has been carried to the verge of starvation. We hope not to incur the charge of advocating gluttony by endeavouring to call attention to what we believe to be popular and medical errors on this subject. To define, illustrate and defend our position would involve a lengthened discussion in which we do not propose now to engage. Suffice it to say that we believe dietetic habits voluntarily restricted to belong among the accessory circumstances, in some instances promoting the tuber-

culous diathesis. Poor living is a fault with some, while it is a misfortune with a larger number, and the former, as well as the latter, are thereby rendered more liable to consumption. This disease is not rife among epicures and gormandizers, albeit they incur the risk of other evils. We do not advocate intemperate indulgence at the table, but we do advise good living as, among other advantages, diminishing the chances of phthisis. As a reason for this advice let it be considered that, with our present views of the hygienic treatment of tuberculosis, so soon as a deposit of tubercle occurs, patients are enjoined to live as generously as possible. Now if this be important directly tuberculosis is declared, would it not have been advisable prior to the development of the disease? in other words, if certain dietetic habits are curative, is it not fair to conclude that they are, to a greater or less extent, prophylactic? With this inquiry we leave the subject.

The hygienic treatment of consumption directed with the hope of effecting an arrest of, and recovery from the disease, relates to diet, exercise, climate, clothing and various matters of minor consequence. The general plan of diet has just been foreshadowed. Under this head Dr. Cotton remarks:—

"The diet is an important subject, and one very often misunderstood. From a fear of increasing the cough or exciting fever, many patients are scrupulously interdicted every kind of nourishing diet, and are fed upon what are usually, and very significantly called 'slops.' In this way they become more feeble, the tubercular deposit increases, the softening process is accelerated, and, when too late, the error becomes apparent. Unless there should exist some inflammatory complication, or urgent dyspepsia, every one at this stage (the first stage) of phthisis needs support, and should live generously, taking a full amount of animal food, as well as ale, or porter, or wine. Such a system of diet, far from aggravating the cough, generally lessens it; and although it may induce at first some slight feverishness and discomfort, these will commonly subside under its continuance."

Dr. Richardson is not less explicit under this head, advising, in a larger proportion than in health, those elements of diet distinguished as respiratory, viz., fatty and oily foods. He recommends especially butter, cream and milk. He might have added sugar, which we believe to be a most useful adjunct to the diet of the consumptive. We should have been better pleased with the injunctions respecting diet, had they been still more emphatic. Generous living is not merely allowable, but it is to be enjoined upon the consumptive as an essential portion of the curative treatment. The desire for hydro-carbonaceous food is to be promoted by every possible way, and the appetite cultivated. It is far better to run the risk of occasional inconvenience or disorder from overtasking the digestive powers, than to incur the certain disadvantage of a diet insufficient in quantity or in nutritive properties.

On the subject of out-door exercise, we quote from Dr. Cotton's work as follows:—

"Fresh air and exercise form equally important parts of treatment. It was formerly the custom when persons had a cough and were considered phthisical, to confine them to the house, or even to one room, and, by carefully closed windows and sundry other arrangements, to avoid the slightest change of temperature; but this pernicious practice has happily been rendered obsolete by the advance of improved therapeutics. Whenever the strength will permit, daily out-door exercise should be strictly enjoined. Should walking be too fatiguing, driving in a close or open carriage, according to the season of the year, may be substituted; but proper days and occasions must be selected, and nothing should

be done which would induce exhaustion or occasion cough. * * * I am far from advocating the indiscriminate use of out-door exercise, and I am anxious only to express my conviction that, under proper regulations, it constitutes one of the most essential parts of treatment."

We fear that the moderate tone and the qualifications with which out-door exercise is recommended in the foregoing quotation, will not secure for the consumptive the full amount of advantages to be derived from this part of the hygienic treatment. A patient affected with tuberculosis must labour for recovery as the working-man toils for his daily bread; he must earn health by his muscular exertions. This is not putting the case in too strong a light. We could adduce from our own observations abundant evidence of the benefit to be derived from hard, persevering exercise in the open air. In this respect the day labourer who becomes tuberculous is more favourably situated than the man of leisure and luxury; and this is shown by the greater frequency with which the disease progresses rapidly among the latter class. The inclinations and the present comfort of the patient are not to be considered; nor is the state of the weather to be much regarded. A tuberculous patient is not more liable to be attacked with pulmonary inflammation, as an effect of exposure, than persons non-tuberculous, and even if pneumonia, bronchitis or pleurisy occur, it does not follow that the tuberculous affection will be unfavourably affected. The consumptive patient should live as much as possible out of doors, and engage in occupations which interest the mind, as well as the muscles, to the fullest extent of his powers of endurance.

On this subject Dr. Richardson is more earnest than Dr. Cotton. He adopts the views of the late Dr. Joseph Parrish; and of the truly great practitioner, James Jackson, of Boston, as set forth in his "Letters to a Young Physician." Dr. Parrish's remarks are quoted in Dr. Richardson's work, and since these were published nearly thirty years ago, and are of especial interest from the fact that their importance, as is well known, was exemplified by the author's personal experience, we reproduce them here. They appeared in the *North American Medical and Surgical Journal* for 1830.

"Vigorous exercise, and a free exposure to air, are by far the most efficient remedies in pulmonary consumption. It is not, however, that kind of exercise usually prescribed for invalids—an occasional walk or ride in pleasant weather, with strict confinement in the intervals—from which much good is to be expected. Daily and long-continued riding on horseback or in a carriage is, perhaps, the best mode of exercise; but when this cannot be commanded, unremitting exertion of almost any kind in the open air, amounting even to labour, will be found highly beneficial. Nor should the weather be scrupulously studied. Though I would not advise a consumptive patient to expose himself recklessly to the severest inclemencies of the weather, I would, nevertheless, warn him against allowing the dread of taking cold to confine him on every occasion when the temperature may be low, or the skies overcast. I may be told that the patient is often too feeble to be able to bear exertion; but except in the last stage, when every remedy must prove unavailing, I believe there are few who cannot use exercise out of doors; and it sometimes happens that those who are exceedingly debilitated, find, upon making the trial, that their strength is increased by the effort, and that the more they exert themselves the better able they are to support the exertion."

We cannot doubt that not a few lives would have been saved, had the importance of Dr. Parrish's precepts and example, as regards exercise in phthisis, been more fully appreciated during the last thirty years.

Change of climate is often highly beneficial in consumption. We take

it no one will deny this assertion. Yet we cannot but think that the confidence placed in change of climate by physicians and patients has, on the whole, had an unfavourable effect on the successful treatment of the disease. It is too often the case that a special influence from climate is expected, and consumptives imagine they have only to go and passively receive the benefit imbibed from the atmosphere of the favoured spot which they have selected. Nothing can be more groundless than such an expectation; and it does harm by taking the place of those rightly directed efforts, as regards diet and exercise, which are essential parts of the treatment. Better far employ diligently all other hygienic measures, in an unfavourable climate, than neglect them in the situation which combines the greatest climatic advantages. There is no special remedial virtue in any climate. Consumption, as Dr. Cotton remarks, is ubiquitous. It exists in all zones and tropics. Of the great number who in the early stage of the disease, leave their native soil to sojourn in places which are considered as more favourable for recovery, the majority die. Nevertheless, change of climate is often highly beneficial. Why is it so? Because change itself is sometimes useful. Because it involves, in certain cases, relief from the cares of business, and recreation. Because it sometimes affords opportunities or inducements for out-door exercise which the patient cannot or will not take at home. We do not deny that, irrespective of these incidental advantages, there is some value pertaining intrinsically to climate. This is comparatively small, and is by no means uniform as regards different persons; one patient may do better in a cold, and another in a warm climate. We see a difference among healthy persons in regard of the influence of different climates; some have more physical enjoyment and vigor in one latitude, and some in another. So, winter agrees best with certain constitutions, and others prefer much the summer season. If, then, it be asked, where is the best spot on this earth for the consumptive, it is evident that the question does not admit of an answer. The question is often answered, but it is answered by a hundred different persons in a hundred different ways—a fact which goes to sustain the correctness of the assertion just made. The interminable discussions respecting the comparative merits of different places of resort for consumptives, form, in our opinion, an almost useless portion of medical literature. But is the patient to be left without advice on this point? By no means. He is to be advised to select a climate which, so far as may be judged from his experience, will be most congenial. Uniformity and dryness are the most important recommendations belonging to the climate itself. The place selected should have other than climatic attractions; it should offer resources for recreation and agreeable occupation. A spot where consumptives most do congregate should be shunned as much as a consumptive hospital. So far as our observation goes, we have seen most marked benefit from European travel; and we attribute it to the greater enjoyment and the stronger inducements to active exercise than can generally be offered by most of the quiet spots to which patients are enticed by the *ignis fatuus* of a health-restoring climate. Travelling we deem vastly better than a fixed residence, in the majority of cases. A journey of some thousands of miles on horseback is far more likely to be serviceable than a season of comparative repose in the choicest spot which can be selected. There are numerous circumstances pertaining to individual cases which are to be taken into account in advising change of climate, irrespective of the stage of the disease and the rapidity with which it is progressing. Of course this is not the place to enter into a consideration of these. We

will only mention one point which is often overlooked; this is, the state of the patient's mind as regards love of change, or the willingness to leave home. If the measure involve constant irritation, ennui, disgust, and homesickness, it will certainly not prove beneficial.

In the remarks by Drs. Cotton and Richardson under the head of change of climate, we find nothing to which we desire to take exceptions. The reader will of course infer from this statement that the views of these authors are not at variance with those which have just been expressed.

On the use of *respirators* the two authors are not entirely agreed. Dr. Richardson regards them with more favour than Dr. Cotton. We cannot see with what end they are to be recommended except to prevent cough when this symptom is provoked by breathing cold air. So far as their use is based on the idea of protecting the bronchial mucous membrane, the importance of the end may be doubted. Since it is not certain that the condition of this membrane has much, if anything, to do with the deposit of tubercle, we fancy that the usefulness of respirators consists mainly in the satisfaction which the patient is apt to feel in taking an unusual precaution.

The subject of clothing is by no means unimportant in relation to the treatment of consumption. Perhaps its importance has been over-estimated. It is certain that over-precautions as regards dress are often taken, which are injurious by nurturing an undue susceptibility to changes of temperature. The popular tendency is to protect the surface too much, and to burthen the body with an overplus of clothing. This is one extreme; but the others has its followers, and we see some consumptives leaving off woollen under-garments, even during the winter season, in a northern climate. Candor compels us to say that we have known this to be done, in deviation from the custom of years, without any apparent disadvantage, but other hygienic measures of a less questionable character were at the same time resorted to. Surrounding the body with a non-conductor of heat as a substitute for the hair, feathers, and wool with which nature has provided inferior animals, is a rational precaution. With reference to this point, we quote from Dr. Richardson's work :—

"For the consumptive, flannel clothing is always required, and it should cover the whole of the body. The poorest man or woman may avail themselves of this, for it matters little what the outer garments are if the under ones are non-conductors of heat. The consumptive patient should sleep also in flannel; not in the dress worn during the day, but in a flannel gown. The thickness of flannel must vary according to the sensations; as far as possible, the feeling of absolute cold ought at all times to be prevented."

Various matters pertaining to the hygienic treatment of consumption are not embraced in the subjects which have been noticed. The importance of pure air, sufficiently large sleeping apartments, agreeable mental occupation, etc., we pass by in order to devote the remainder of our space to a few questions, connected with this disease, which have important practical bearings.

Several questions of interest and importance relate to the occurrence of hæmoptysis. How far is this symptom diagnostic of tuberculosis? What are its relations to the deposit of tubercle? What effect has it, if any, on the progress of the disease? What measures of treatment does it call for? These and other inquiries open up a field for clinical study, which, although it has been to some extent cultivated, is by no means exhausted. It is certain that this is not unfrequently the first palpable symptom of a

tuberculous deposit. That in some instances it precedes the deposit, and is to be considered as a symptom of the preliminary stage of consumption, is almost as certain. That it occurs without being followed by tubercle or any other disease, and in cases in which its occurrence cannot be imputed to cardiac disease or any obvious cause, we are assured from instances which have come under our observation. Clinical facts show that it sometimes denotes an abundant and rapid exudation of tuberculous matter. Under these circumstances it sometimes marks an epoch when the condition of the patient becomes suddenly alarming, and from which the decline is rapid. It is natural then to attribute the change to the hemorrhage, but the latter is only a concomitant, and probably had no agency in producing the subsequent condition of the patient. In other cases, so far from being symptomatic of a sudden and copious irruption of tubercle, it occurs when the deposit is small, and the disease apparently progresses more slowly after than before its occurrence. Clinical observation shows that the frequent occurrence of hæmoptysis characterizes some cases in which the progress of the disease is unusually slow, and there is ground for the opinion that, in these cases, the effect of the hemorrhage is salutary. Patients often experience marked relief of cough and other pulmonary symptoms after an attack of hæmoptysis. In fact, we have been led to think that an effusion of blood sometimes occurs as a substitute for a fresh exudation of tubercle. Here are expressed, briefly, some views which have direct practical bearings, but it must be confessed, the accumulation and analyses of facts are requisite before we are authorized to answer fully and positively the questions which have been propounded. With our present knowledge, however, hæmoptysis does not call for active therapeutic measures. Its occurrence generally occasions so much alarm on the part of patients and their friends, that the practitioner can hardly refrain from efforts to arrest the hemorrhage on this account.

Our object in the preceding remarks is mainly to enter a protest against the custom of bloodletting in hæmoptysis, a custom which, although less observed than formerly, is still too often followed.

We are disposed to find fault with Dr. Cotton for not being sufficiently decided on this subject. He says that "bleeding should never be employed on ordinary occasions, nor without bearing in mind that phthisical persons can more easily lose blood than remake it;" and he adds, "practically, it will very rarely indeed be found necessary." But he admits that "the propriety of bleeding is a point often difficult to decide;" and that "when there is a disposition to plethora, with a strong pulse, a slight abstraction of blood from the arm may be serviceable." These remarks presented thus, antithetically, show the cautiousness of the author, and we fear that some readers, prone to sanguinary measures, may find in the indefiniteness with which the subject is treated, a warrant for bleeding when it should not be resorted to. We have hazarded the opinion, it is true, that hemorrhage from the lungs may be an advantage occurring in the place of a tuberculous exudation. This is not saying that the detraction of blood can ever procure the same advantage; nor that the loss of blood by bloodletting, added to the loss by hemorrhage, is ever useful. It would perhaps be an extreme view of the subject to consider bloodletting as never proper, but, assuredly, the exceptions to the rule of its inappropriateness are infinitely rare. Dr. Richardson's language with reference to this subject is sufficiently strong. He says:—

"To draw blood from a man already bleeding from the lungs, to put him on

water diet, to purge him with salts, is opposed equally to physiology, pathology, and practice. If a man were bleeding from the femoral artery, would any one then think of bleeding him from the arm? Is venesection the remedy for a woman dying of uterine hemorrhage? Surely not; nor is it the remedy in hæmoptysis."

Certain questions important in their relations to pathology and practice, have reference to the coexistence with pulmonary tuberculosis of affections of the larynx and pharynx. Of laryngeal phthisis Dr. Cotton says:—

"*Laryngeal phthisis*, although often looked upon as a distinct form of consumption, differs in nothing from ordinary and chronic phthisis, except that the larynx, and sometimes also the trachea, being implicated in the disease, the whole symptoms become aggravated, and the general aspect of the case is rendered less promising, in consequence of the suffering and distress which are thus superadded."

We take it that this is the correct explanation of what is called by the misnomer, laryngeal phthisis. But so long as this term is employed, constant explanations will be necessary in order that false views may not be perpetrated. The idea conveyed by the term has become obsolete, and it is desirable that the term should be dropped. Chronic laryngitis, in the vast proportion of cases, is associated with tuberculous deposit in the lungs, and when thus associated it is consecutive to the pulmonary affection; it is, strictly speaking, a complication of phthisis. We suppose that Dr. Cotton is sustained by the opinions of the best pathologists in regarding the laryngitis as due to the deposit of tubercle in the larynx. Yet, there are practitioners who appear to consider the laryngitis as the point of departure for the tuberculous disease, and, if we may judge from their practice, attach importance to local applications within the larynx as preventives of, or remedies for, consumption. In the excited discussions which have taken place in our country during the last few years respecting the possibility of introducing sponges into the larynx, and the best means of bringing topical remedies into contact with the laryngeal mucous membrane, an important question has been, in a great measure, lost sight of, viz., *cui bono?* How much good is to be expected from local applications to a tuberculous affection of the larynx, supervening on a tuberculous deposit in the lungs? We need hardly appeal to the fruits of clinical experience for an answer to this question. But clinical experience is not silent on the subject. The practice has now been pursued for several years to a considerable extent, and instead of growing in favour it is evidently dying out. Many practitioners who for a time resorted to it, have ceased to employ it. There is danger, from the tendency to extremes, that it will fall into too great neglect. In a certain proportion of cases it is useful as a palliative measure, and although the number of persons who derive benefit from it may be small, they should not be deprived of the relief which it affords. That the introduction of the practice is a positive addition to the resources of our art, is not to be denied. But it would argue either unsound pathological views, or something worse than this, to hold out inducements to patients to resort to it as a curative measure.

It is a digression to refer to the efforts which have been made to introduce medicated liquids into tuberculous cavities in the lungs, but the subject naturally suggests itself in this connection. Here, too, discussion appears not to have gone much beyond the question of practicability. But here there is a good reason for this limitation, viz., the impracticability is sufficiently clear. Unless a tube can be actually introduced into a tubercu-

lous cavity, it is plain that a liquid injected into the trachea or a bronchus must, in obeyance of the law of gravity, flood the tubes and cells below the site of the cavity, before the latter is filled; hence, inasmuch as tuberculous cavities are situated at the apex in the vast majority of cases, at least one lung must be placed completely *hors du combat* before the operation can be completed. The sudden suppression of the function of one lung only, and not of both lungs, requires that the injection shall be limited to one bronchus, and if the tube through which the injection is made cannot be carried into one bronchus, a fatal asphyxia would precede the filling of the cavity or cavities. Of the practicability of introducing a tube into the cavities themselves, the reader can judge who has often attempted this operation on the dead subject. After these remarks, into which we have been led digressively, we deem it hardly necessary to inquire as to the amount of benefit to be expected from the local effect of a medicated liquid within a tuberculous cavity. This inquiry would be sufficiently answered by another, viz., what relation has the local affection to the disease?

Respecting the coexistence of pharyngitis and phthisis, we shall offer a few remarks to which we would ask the attention of the reader. But we shall premise Dr. Cotton's remarks on this subject :—

"*A low inflammatory condition of the pharynx* is not an unfrequent attendant upon phthisis, and sometimes appears among its earliest symptoms. It usually commences at its posterior wall, and has a tendency to spread, not only over the whole pharynx, but also into the larynx, laying, in many cases, the foundation of what is termed *laryngeal phthisis*. The mucous membrane presents, at first, a number of dark or vivid red patches or streaks, which gradually coalesce ; a yellowish, tenacious mucus soon appears upon its surface; the tonsils become enlarged, and the uvula is elongated. If the mucous follicles upon and behind the tonsils be now carefully examined, they are often seen to contain a yellowish-white substance, apparently of a scrofulous nature, which, becoming expelled, frequently leaves behind it small ulcerations. These ulcerations sometimes spread and involve a considerable portion of the pharynx, especially at its posterior part. The epiglottis, meanwhile, frequently becomes red and congested; the laryngeal mucous membrane participates in the attack ; and the general symptoms of laryngeal inflammation—of which more will be said elsewhere—make their appearance. In many instances, the diseased action remains limited to the pharynx ; but in those cases where it extends to the larynx, it sometimes altogether leaves the pharyngeal membrane."

The tone of this review thus far will lead the reader to acquit us of being actuated by a spirit of criticism in dissenting *in toto* from the pathological doctrine embodied in the foregoing extract. We believe the author to be in the wrong, and the error is not without evil practical consequences. Chronic pharyngitis, with or without an accumulation of sebaceous matter in the follicles, is exceedingly common, at least in this country. It is by no means confined to members of the clerical profession, but it occasions in this class greater apprehension than with others lest the voice may become impaired. It is comparatively rare in females. It is a very obstinate affection, hardly less so since than before the introduction of swabbing the throat with a solution of the nitrate of silver. This practice, in conjunction with the popular diffusion of the error contained in the foregoing extract, has served to show that the affection prevails much more extensively than had previously been supposed. In several points of view, it is the analogue, in the male, of the chronic inflammation of the mouth of the uterus so common and rebellious in the female. Dr. Cotton thinks that the inflammation is liable to extend into the larynx and lay the foundation

of *laryngeal phthisis;* in other words, it is a forerunner of pulmonary consumption. This is the pathological view from which we dissent. This view is widely disseminated among the people at large in this country. Persons with chronic pharyngitis (and their name is legion) suppose that they are in danger of a gradual extension of the affection downward till it reaches the lungs and eventuates in consumption. This idea is assiduously fostered by the host of throat doctors who have made their appearance within late years. These men, taking advantage of the fears of their clients, profess to prevent and cure consumption by throat swabbings or injections and medicated inhalations. We are confident in the correctness of the opinion that the doctrine enunciated by Dr. Cotton finds no support in clinical experience. We say this after abundant opportunities for observation for many years. The condition of the system associated with chronic pharyngitis, is not the condition favourable for the development of tuberculosis; nor is it converted into the tuberculous diathesis. So far from the existence of chronic pharyngitis pointing to phthisis, it renders the latter less probable. In a case in which the evidence of phthisis is so slight as merely to constitute ground for suspicion, chronic inflammation of the pharynx, exclusive of laryngitis, militates against the supposition that the disease is present; it is entitled to some weight against the diagnosis. We have been led to this rule not by speculative reasoning, but by clinical experience, and we have for several years acted upon it. It is pleasant to feel warranted in giving to patients with this affection, whose apprehensions are enhanced by the morbid condition of the nervous system often associated with it, positive assurances that they neither are, nor are likely to become consumptives; but here, as in many other instances, gratification of this kind conflicts with selfish interests. This class of patients are made to contribute largely to the profits of itinerant consumption-curers.

In conclusion, we would revert for a moment to a point noticed at the commencement of this review, viz., the deposit of tubercle by no means covers the pathology of phthisis or consumption, but is merely one of the effects of the disease. This fact is illustrated by the striking want of correspondence often existing between the general symptoms and the amount of deposit. We see patients with a small deposit presenting a frequent pulse, perspirations, debility and rapid emaciation; and, on the other hand, an abundant deposit may be, so far as symptoms are concerned, almost latent. This is not solely because the presence of tubercle produces in one person great commotion in the system, and in another person comparatively little or even no disturbance. There is, it is true, a difference in this respect; an equal amount of deposit is borne differently by different persons. But the remarkable contrast in the general symptoms which different cases present, is owing, in a great measure, to variations as regards the special morbid condition or cachexia preceding the deposit, and which, in fact, constitutes the disease. Again, the rapidity with which the disease goes on to a fatal termination, is not commensurate with the quantity of tuberculous matter deposited, nor with the secondary complications. The disease destroys, not alone by its local effects, but by the general disorder which it occasions, irrespective of these effects. Every one accustomed to determine the amount of deposit, so far as this may be done by the physical signs, must have been led to consider this amount as no criterion by which to estimate the immediate danger and the probable duration of the disease. The pulse, the skin, the appetite and digestion, the emaciation and the state of the vital forces, are far more to be relied upon in the prognosis. Hence, in a series of exami-

nations after death, between a moderate collection of crude tubercles and almost complete destruction of the lungs, there will be found every degree of gradation. There is then, a great difference in different cases in the intrinsic tendency of the disease to a fatal result, independently of the morbid condition of the lungs. This fact is to be taken into account in judging of the success of treatment. Measures which may succeed in the cases in which the diathesis is weak, may be wholly nugatory when the diathesis is strong. The tendency of the disease, in a large proportion of cases, is to end fatally sooner or later; but there are exceptions to this rule. The cachexia may be, as it were, exhausted by a small deposit, and the disease thus undergoing arrest, recovery takes place, perhaps without any remedial measures. The frequency with which obsolete tubercles are found in bodies dead with various affections, is in this way accounted for. We are satisfied that spontaneous arrest and recovery from tuberculosis takes place much oftener than is generally supposed. And the object of the physician is to aid in effecting what nature unaided sometimes effects, viz., the removal of the cachexia and the eradication of the diathesis. It cannot be too much reiterated that this object is to be effected, not by special medication, but hygienic measures, by which the body is invigorated, renovated and reconstructed.

Of the two works whose title-pages preface this review, we have noticed certain parts only, which relate to the pathology and hygienic treatment of consumption. The work by Dr. Cotton embraces a brief consideration of the general characters, minute structure, and chemical composition of tubercle; its situation; the identity of consumption and scrofula; the relation of consumption to other diseases; the causes of the disease, its symptomatology and its physical signs. Dr. Richardson's work is more limited in its scope, being confined to the hygienic treatment. It contains much interesting and useful information within a small compass, and is written in a sprightly, racy style, which renders it quite attractive. A. F.

ART. XIII.—*On Epilepsy and Epileptiform Seizures, their Causes, Pathology, and Treatment.* By EDWARD HENRY SIEVEKING, M. D., Fellow of the Royal College of Physicians; Physician to, and Lecturer upon Materia Medica at, St. Mary's Hospital; etc. etc. etc. 12mo. pp. 267. London, 1858.

Epilepsy and other Convulsive Affections, their Pathology and Treatment. By CHARLES BLAND RADCLIFFE, M. D., Physician to the Westminster Hospital, etc. Second edition, revised and enlarged. 12mo. pp. 383. London, 1858.

THE etiology and pathology of convulsive diseases still remain open subjects for investigation. Our knowledge in relation to them is as yet inexact and limited—much more so than might reasonably have been expected considering the light that has been shed upon the physiology of every portion of the nervous system by the labours of recent experimentalists, and the long array of facts that have been recorded in illustration of its several morbid conditions.

We may, perhaps, confidently assume, as a general proposition, that all

convulsive phenomena, from the mere twitching of a single muscle to the most violent and prolonged agitation of every voluntary muscle of the body, are the result of an irritation or other morbid condition of some portion of the nervous centres, and that the variations observed in the character of the convulsive seizures in different cases are due to the particular portion of the nervous centres, which is the seat of the irritation or disease, and to the greater or less extent of these centres which is morbidly affected.

We are probably justified in advancing even a step further than this—by referring the predisposition to the occurrence of convulsions in certain individuals, while others are almost entirely exempt from them under apparently the same kind and degree of irritation—the same form and extent of disease—to a particular condition of constitution inherited or acquired—a peculiar nervous temperament, a convulsive diathesis. This condition of constitution, marked by an imminency of convulsive movements in the voluntary muscles from often slight and transient morbid impressions, is the same state as that which writers on convulsive diseases have endeavoured to represent by the expressions morbid nervous mobility or excitability—nervous debility, etc.

But, even should the truth of the foregoing propositions be fully and universally recognized, this would advance us but a step or two in our acquaintance with the etiology and pathology—the actual causation and true nature of any of the diseases attended and characterized by convulsive seizures. It would be very far from covering the entire ground embraced in the philosophy of these diseases. The questions would still present themselves for solution: Are they dependent in all cases upon a morbid impressibility of the nervous system without actual disease? Are they ever the result of a diseased condition of any portion of the nervous centres, and if so, what is the nature of that condition? Can they be produced by certain abnormal irritations acting upon a nervous system, neither diseased in any part nor morbidly sensitive to impressions made upon it? What is the relation existing between the convulsive seizures and certain morbid phenomena with which we find these seizures associated in certain cases? and what is the nature and causation of those phenomena? Thus, we find that, in reference to the most important circumstances, in a practical point of view, connected with the pathology of convulsive diseases, we remain still in utter ignorance, and, until that ignorance is removed, it must be evident that the treatment of those diseases can rest upon no better basis than mere empiricism.

At the very head of the convulsive affections may be ranked epilepsy, as at once their great type, and the key to their interpretation. It owes its pre-eminence to the violence of the paroxysms of general convulsions by which it is characterized—the suddenness of their onset, and the strange and apparently inexplicable symptoms by which they are accompanied. And it becomes the type of the entire list of convulsive maladies from the fact, that it embraces nearly all forms of convulsive movement, from the tetanic spasm to the rapid contraction and extension of the limbs, and the most frightful and extravagant contortion of the features. It must be evident, therefore, that every advance towards the elucidation of its pathology must very effectually clear the way for a correct understanding of the theory of convulsive diseases generally.

The entire phenomena of epilepsy, in many respects so strange, mysterious, and appalling—the comparative frequency of the disease, and its melancholy results when violent or protracted, have all tended to render it

the subject of close and anxious investigation on the part of some of the ablest physicians of the past and present times. Although each successive inquirer, in common with those who have preceded him, has failed to reveal its true pathology, still, every year new inquirers come to the work with increasing confidence that each new advance which is made in our knowledge of the physiology of the nervous system will render them more successful in their efforts to remove from the character and nature—the seat and causation of epilepsy, the mystery in which they are still enveloped.

Among the many treatises on epilepsy which have appeared within a recent period, the two whose titles are given at the head of this article are among the most complete and interesting—the fullest and most accurate in their analysis of the phenomena of the disease; the most consistent and satisfactory in their exposition of its pathology; the most philosophical in their development of the therapeutic principles upon which its successful treatment, as well curative as prophylactic, must be based; and the most clear and definite in their teachings with respect to the measures, remedial and hygienic, by which those principles are to be carried out in practice.

We apply to both these works the same general terms of commendation. Though in some respects they differ widely from each other, still their authors have unquestionably dealt with the leading circumstances bearing upon the disease of which they treat with great clearness and ability. They both arrive at nearly the same etiological, pathological, and therapeutical conclusions, though expressed in somewhat dissimilar terms, and arrived at from somewhat different premises. In many respects the treatise of Dr. Sieveking may be pronounced, perhaps, superior to that of Dr. Radcliffe. The former confines his investigation within a narrower compass, directing it exclusively to the subject of epilepsy and epileptic seizures, while the latter takes in the entire list of convulsive diseases, and devotes fruitlessly, also, a large portion of his work in the exposition of a theory of muscular motion, which can never, we are convinced, be generally received.

The question as to the proper treatment of epilepsy is discussed with very great ability, certainly, by both authors. We think, however, that the examination of the question, as presented by Dr. Sieveking, will be found to be the most full, explicit, and philosophical of the two—and to take more into consideration the modification of remedies demanded by the varying features presented by the disease in different patients—by the circumstances of age, condition, and habits in its subjects, and by the date of the attack; having a due reference, also, to the moral and hygienic conditions that are calculated to counteract or concur with the efforts of the physician to prevent or eradicate the disease.

The peculiar characteristics of the epileptic paroxysm or seizure, which has given to the disease its name, and has been by many looked upon, apparently, as constituting the entire morbid condition present in those in whom it occurs, are so perfectly familiar to every physician that it is scarcely necessary to enumerate them. In every description of epilepsy is noted the sudden occurrence of the fits—usually with a shrill, appalling scream—the patient being at once dashed to the ground, when spasmodic contractions of the voluntary muscles at once ensue, and quickly pass into violent convulsive distortions, attended with entire loss of sensation and consciousness. Nearly all authorities agree that, in many instances at least, the accession of the fit is immediately preceded by a transient sensation of a peculiar character, which admonishes the patient of what is about to occur. We need only add, that after a period, varying from ten to twenty minutes,

the epileptic paroxysm usually subsides, profuse perspiration ensues, consciousness returns, and the patient is restored to comparative health. The fit being ordinarily followed by considerable drowsiness, terminating in a deep, natural, refreshing sleep.

Although there is a very great uniformity in the general character of the epileptic fit, as it is observed in different cases, still its individual features will often vary in the frequency of their occurrence as well as in their intensity; and as it is well known that the several affections of the nervous system are liable to merge into each other, the diagnosis between epilepsy and other closely allied diseases, particularly at its commencement, may occasionally be attended with some difficulty.

A most admirable analysis of the several phenomena, the concurrence of which constitutes the epileptic paroxysm, with the view to determine their relative value and frequency, is presented by Dr. Sieveking. From this analysis it will be seen that the convulsive paroxysm of epilepsy varies very considerably in regard to the presence and prominence of certain of its features—especially in the character, degree, and location of the convulsive movements. These are found to pass through every change, from the spasm of an individual muscle to the most violent agitation of the entire voluntary motive apparatus of the body.

"In many cases," says Dr. S., "nothing but a slight spasm is perceptible about the muscles of the neck, in others nothing but a contraction of the fingers or toes—the carpopedal contractions of authors—indicates the nature of the seizure, or the eyes only are peculiarly affected, or, again, a close observer is able to detect nothing of a spasmodic character, and the inference of the case before him being epileptic might be unsafe, unless in the same individual more decided epileptic seizures had been previously manifested, or unless he found that the symptoms were identical with those observed in other instances where the epileptic nature was undoubted."

The abnormal sensation by which the fit is often ushered in, and which Dr. S. considers to be improperly described as an aura, or draught, or current, is present in perhaps one-half the cases of epilepsy, according to the experience of Dr. S.; so far as our observations on this point go, however, it is much less frequent. The same patient may be sensible of it in some of his attacks, but not in others. This we have known to happen in repeated instances. The sensation preceding the fit, when it does occur, varies greatly in its character, and in a few cases it has been found to be sufficiently curious and bizarre. According to Dr. S., the various premonitions of the epileptic fit may be readily arranged in two classes, namely:—

"Those that are referred to the trunk and extremities, and those that appear at once to affect the head. In the former case, the sensation is always described as mounting towards the head, and in the majority of cases the paroxysm appears to strike down the patient on its reaching that part; in the latter, the sensation commonly takes the form of some strange illusion, which, however, the patient is able to recognize as such."

The two classes of sensations, above referred to, are in all probability connected with the centric or eccentric origin of epilepsy.

Although insensibility is almost invariably recognized as an essential feature of the true epileptic paroxysm, yet it has been shown by Dr. S. that convulsive seizures, with all the other characteristics of epilepsy, do occur, in which a certain amount of consciousness is retained throughout. This has been regarded by some as an indication that the convulsive paroxysms

are dependent in such cases upon a local rather than upon a constitutional affection.

Cases of epilepsy are related by respectable authors in which the convulsive movements were limited to a small number of muscles—those of a single limb for instance. The propriety of considering such cases as examples of genuine epilepsy, may, in our opinion, be very properly doubted.

The trachelismus, upon which Dr. Marshall Hall bases the entire theory of the disease, Dr. S. admits may take place, but he considers it to be of secondary importance to other morbid conditions present during the convulsive paroxysm.

"While," he remarks, "it would be impossible to deny that spasm of the muscles of the neck, the platysma, sterno-cleido-mastoid, scaleni, and trapezius more particularly, materially affects the circulation of the blood in the vessels of the part, the literal interpretation and careful observation of all the symptoms of epilepsy will not allow of our regarding this as more than a small part of the phenomena. The experiments of Sir Astley Cooper show that compression of the arteries leading to the head may induce epileptic seizures in animals, and while there is ample pathological evidence to show that morbid conditions, inducing compression of the vessels of the neck generally, are frequently associated with epilepsy, cases of an opposite character are not wanting in the history of medicine."

The condition of the pulse during the epileptic paroxysm is without any very positive pathognomonic significance. Dr. S. has found its prevailing character, in the majority of cases that have fallen under his observation, to be the same as is met with in subjects deficient in blood and tone.

"It is generally much accelerated, feeble, and soft. In cases exhibiting more of the sanguineous and florid type, the pulse may present no variation from the normal character. The same will probably be the case when the attacks have only commenced recently, or occur at long intervals. The more frequent they are, the more perceptible will be the derangement of the circulation; but in no case does it appear that even prolonged cases of epilepsy exercise any definite influence upon the central organ of the circulation. Nor can any causal relation be traced, such as exists between chorea and morbid conditions of the heart. In short, the manifestations of any influence of epilepsy upon the circulation appear to be confined to such effects as may be found in any circumstances which at once enfeeble the individual while they excite the circulation."

The frequency with which the paroxsysms occur varies greatly. They are, at first, generally separated by intervals of several months, but gradually the intervals become shortened, until the paroxysms may recur daily, or many times each day. Their occurrence is never marked by anything like regular periodicity, though sometimes, in the female, they would appear to bear an evident relation to the catamenial periods. Such periodicity, as Dr. S. very truly remarks, even were it uniformly observed, can scarcely be said to constitute a feature of the epilepsy; the semblance of periodicity is due to the induction of the convulsive seizure depending upon another condition which is in its nature of a periodical character.

Sleep would appear to excite the epileptic fit, from the physiological effect which the state of somnolence exerts upon the brain. All, however, it appears to us, that facts will bear us out in asserting is, that there is "a peculiar proclivity in some epileptics to nocturnal seizures." In the cases observed by us, the seizure took place very frequently at night, but certainly not more so than during the daytime, when the patients were awake, and often when they were engaged in some occupation.

The epileptic paroxysm would appear to occur with pretty nearly equal

frequency throughout every season of the year. In our own experience we have certainly found them to be most frequent, however, during the warmest and the coldest months.

Headache is considered by Dr. S. as bearing a close relation to the epileptic fit, and as of momentous import in reference to the pathology of the disease. Headache occurring immediately after the convulsive paroxysm is often, it is true, simply the effect of the latter; but when headache is experienced by the epileptic habitually, or when it precedes the convulsive seizure, it has a much more important and serious significance. Habitual headache Dr. S. has observed to be, in many instances, an indication of a strong predisposition to epilepsy, or to occur, possibly, in a subject in whom the epileptic paroxysm has been manifested merely by slight vertiginous attacks, by a single attack in former times, or by some spasmodic action that alone would not be regarded as of an epileptiform character. The pain in this form of headache may affect any part of the head, but it is frequently limited to a spot at the vertex.

Generally, the epileptic fit is followed by a state of somnolency. "Instead of the sleepiness, we sometimes observe a state approaching to or constituting actual delirium—or the same patient at one time sleeps a long time after the fits, and then a period comes when he or she is delirious for several hours after the paroxysm has gone off."

"This," to complete the history of the progress and end of the whole affair, in the beautiful summary of Dr. Radcliffe—

"This is the usual, but not invariable course of the fit. Indeed, the attempts at rallying may be very imperfect, and fit after fit may recur for a long period without any interval of waking, or all rallying may be prevented by death.

"—— After waking, there are generally some symptoms of reaction in the circulation; but in simple epilepsy these are never very marked. They may be enough to give a dull flush to the cheek and add a little fulness to the pulse, for a short time after the patient wakes; but, as a rule, these symptoms cease when the coma ceases, and the coma is never much prolonged in simple epilepsy. Usually the patient is headachy and exhausted, listless and stunned, moody and irritable, until a night's rest has enabled him to recover the balance of his shaken nervous system. The faded countenance also tells plainly of the past struggle, even though it may present none of those numerous and minute dots of ecchymosis about the eyelids and upon the forehead, which are such unequivocal signs of a severe attack of epilepsy.

"As time goes on, the mental faculties recover more and more imperfectly, and more and more tardily, and at last their habitual state may be one of pitiful fatuity, from which no single ray of the divine principle beams forth. Or the moodiness and irritability which follow the attack may become more and more marked, until at last they merge into attacks of downright mania. Or symptoms of paralysis may make their appearance; or death may happen in a fit or shortly afterwards. The natural tendency of epilepsy is assuredly towards dementia; and dementia is the final doom of the epileptic, if his disorder be unchecked, and life prolonged sufficiently; and this equally, whether symptoms of insanity have or have not been developed; but, at the same time, it is possible for an epileptic to have many fits, and live many years, without ever losing the powers which are necessary to render him an agreeable and serviceable member of society. If death happens, it happens most generally from exhaustion in the period of prostration immediately following the paroxysm."

The great error that has been committed in investigating the pathology of epilepsy, has been the restricting of attention too exclusively to the convulsive paroxysm, overlooking the morbid phenomena present during the intervals, as indicating a permanently abnormal condition of certain organs,

as that constituting in a proper sense the actual disease, and of which the convulsive seizures are but one of the symptoms. Or, when the morbid phenomena that exist in the intervals between the convulsive seizures are recognized, viewing them as mere effects of the paroxysms, rather than as the results of the same morbid conditions that produce the convulsive seizures themselves. As Dr. S. has well observed, it is impossible to arrive at a correct appreciation of the epileptic paroxysm so long as it is studied separately from the intervening periods or so-called free intervals. He has, therefore, with great care, investigated the condition of the epileptic in the intervals between the paroxysms, and accurately noted the morbid phenomena which are then most generally to be met with. They will be found to be such as are universally recognized to be indicative of more or less disturbance of the cerebro-spinal functions.

A single epileptic seizure may occasionally take place, and pass away never to be repeated, and if we are correct in considering the convulsions of infancy as truly epileptiform, single non-recurring paroxysms are of much more frequent occurrence than Dr. S. would seem willing to allow. It is very certain that a very strong relationship exists between the convulsions of infants and true epilepsy—if the two be not, in a strict pathological sense, identical. The proof of this is found in the fact that those who have been during infancy subject to repeated convulsive attacks, are among those most prone to epileptic seizures in after life.

The more frequent the epileptic paroxysms recur, the more marked will be the morbid phenomena which occur in the intervals; still, as Dr. S. remarks, a careful observer will rarely fail to discover a certain peculiar deviation from health in all epileptic patients—even in those whose convulsive seizures occur only after very long intervals.

"There will be the characteristics of a nervous diathesis; an excitable, frequently irritable, manner; a restless eye; a quick but feeble pulse; more or less difficulty in collecting the thoughts, and connecting the different links of mental association, while, at the same time, one or other of the organic functions presents a palpable deviation from health: the organs that are more particularly under the domain of the sympathetic ordinarily show that they are deficient in vigor, that they want that stimulus which the vascular and nervous systems supply when the individual enjoys robust health."

The symptoms most commonly present in epileptics during the intervals of the fits, are constipation, eructations and flatulence; enlargement of the pupils; occasional vertigo; anomalous sensations in different parts of the body; more or less habitual headache, with or without vertigo; slight partial spasmodic seizures, giving rise more especially to a distressing sense of suffocation or choking.

Epileptic vertigo, as well as epileptic headache, is described by Dr. S. as often existing for a long time—many years perhaps—before the occurrence of an epileptic seizure. Frequent, brief attacks of vertigo, and semi-unconsciousness, occurring in the intervals of the convulsive paroxysms, are always to be viewed as symptoms of very serious import. They are often conjoined with failure of memory, difficulty of articulation and dysphagia.

Subsequent to the paroxysm, temporary paralysis of a part, or of the entire body may remain; when partial, giving rise, in some cases, to stammering, or to distortions of the hands or feet. These latter phenomena may even become permanent.

The epileptic, long before actual idiocy sets in, will in most cases have an expression of hebetude—a peculiar heaviness about the eyes; a pasty,

leaden, or livid hue of countenance; puffiness of the face, and a thickness and coarseness about the lips, with often a constant dribbling of the saliva from the mouth. The peripheral circulation is sluggish, hence epileptics are chilly and liable to coldness of the extremeties.

As to the immediate cause of death in epilepsy nothing satisfactory can be affirmed. Dr. S. points out, however, the frequency with which the fatal event is associated with symptoms of an apoplectic character.

With respect to the causes of epilepsy, everything is involved in doubt and obscurity. Upon this subject the most opposite opinions have been entertained—diametrically opposite observations have been adduced, and the most loose and discordant statistics appealed to.

Dr. S. thinks it probable that in the production of the first onset of the epileptic paroxysm both a predisposing and an exciting influence invariably concur. It is very certain that all those circumstances which have been observed to predispose to the disease may be present without the occurrence of an epileptic seizure, while, on the other hand, individuals have been fully exposed to the same influences which have been known to induce the epileptic paroxysm in others, without their becoming epileptic. When, however, a seizure has once taken place, it will usually be reproduced under much more trivial circumstances than brought it on in the first instance—often, indeed, without any recognizable exciting cause.

"The great bulk of the evidence," Dr. S. remarks, "is in favour of the view that the predisposing influences enfeeble the body, and more especially the nervous system. The disease is regarded by the great majority of authors, past and present, as one of debility, and the influences that induce it are such as would weaken the individual, and expose him to the reception of noxious influences of all kinds. Hence we may assume something more than the predisposing influences, commonly so called—namely, a peculiar habit of body, which we are certainly unable to define, but which, for want of a better term, may be called a nervous diathesis."

Epilepsy is a disease common to all climates, and all countries. It affects alike individuals of all conditions of society, of both sexes, and of every age of life, and apparently of all races and peoples.

That the disease, though usually of sporadic occurrence, has occasionally prevailed in an epidemic form, there seems to be little doubt. In the histories handed down to us of the convulsive epidemics of the middle ages, the epileptiform character of many of them is easily recognized, while by physicians of the present century we are furnished with accounts of similar epileptiform epidemics, as that of Teheran, in India, in 1842, described by C. W. Bell, in the *Medico-Chirurgical Transactions*, and the peculiar "epidemic epilepsy" which prevailed in Kentucky previous to 1805, and accurately described by Dr. Sutton, in the last volume of the *Transactions of the American Medical Association.*

Whether males or females are the most frequent subjects of epilepsy, is a question in respect to which there exists no little discrepancy of opinion. Our own observations, and the statistics we have been enabled to collect from other sources, show a decided preponderance of male over female epileptics. This would appear to be in accordance with the observations of nearly all the continental authorities excepting the French.

There can be no doubt that the period of puberty is that at which the invasion of true epileptic paroxysms most frequently takes place, unless, as we believe would be perfectly correct, we recognize the convulsions of infants as epileptic, when the period of dentition would be strictly that at which the invasion of the disease most frequently occurs.

Dr. S. sets down hereditary influence as an evident predisposing cause of epilepsy. By Herpin, Moreau, and some others, the attacks of every variety of nervous affection in parents is included among the hereditary influences to which epilepsy is often traceable. The fact, however, may be more correctly stated, perhaps, by saying that the offspring of those who have suffered from nervous diseases, inherit a peculir condition of organization which predisposes them to the occurrence of the same class of affections, including, of course, epilepsy.

Whatever relation may be supposed to exist between an albuminous condition of the urine and the epileptic convulsions incident to the pregnant, parturient, and puerperal female, with which it is so commonly associated, it is very certain that no such relation exists between albuminuria and epilepsy as it generally occurs, inasmuch as no uniformity can be traced between the presence of albuminous urine and the occurrence of epileptic seizures in the male and in the unmarried and non-puerperal female.

"Albuminuria," Dr. S. remarks, "when present, by impoverishing the blood, or by the coincident relation of urea in the blood, may, and frequently does, nevertheless, appear to cause epileptic seizures; but in the great majority of cases of epilepsy, no palpable derangement of the renal secretion can be detected."

An impaired state of the digestive organs, and more or less derangement of the intestines are very generally present throughout the entire course of epilepsy. Frequent disturbance of these organs may probably in some instances lay the foundation—act as a predisposing cause of the disease. The entire assemblage of stomachic and intestinal ailments so generally observed in epileptics are to be viewed, however, in most instances as indications of that general condition of impaired health upon which the predisposition to epilepsy properly depends.

One of the most frequent causes of epilepsy in the male is unquestionably masturbation. In the female it may also be traced to the practice of self-abuse, but much more rarely. In her, epilepsy has a more marked relation to derangements of menstruation—some degree of which very generally attends the disease. Such derangements, however, as Dr. S. very truly remarks, "may not be regarded in any other light than as indicative of a general derangement of the system, coincident with the epileptic paroxysm, and though not causing, yet favouring, its occurrence."

Dr. S. says nothing in respect to the predisposition to epilepsy generated by the intemperate use of intoxicating drinks; in the course of our experience we have certainly found the drunkard to be particularly prone to epileptic seizures. In one hundred and eleven cases of epilepsy, the histories of which we have collected, thirty-one were clearly traceable to intemperance.

Epilepsy is a frequent consequence of premature synostosis of the cranial sutures and fontanels. Although this has been shown to be the case by Müller and other of the German writers, and by one or two English observers, it is not noticed by either of the writers, whose works are before us. The subject will be found to be fully discussed in a paper by Dr. Jacobi, in the volume of "Contributions," noticed in the present number of this Journal.

In a large number of instances no particular circumstance can be fixed upon as the exciting or immediate cause of the epileptic paroxysm. Among the most frequent of the exciting causes, have been enumerated fright and fear, intense mental application and excitement, intense mortification, vio-

lent anger, inordinate joy, prolonged intense anxiety, the unexpected receipt of good or bad news, the onset of fever, of smallpox, etc., teething, difficult menstruation, falls from a height, blows on the head, insolation, sexual indulgence, etc.

Although it is very certain that the epileptic seizure may be brought on by suddenly excited, intense mental emotions, and perhaps, also, by various purely physical impressions; as well as by certain pathological occurrences—anything in fact that shall induce a direct morbid impression upon the nervous centres, or an irritation in some remote part or organ reflected upon the brain and spinal cord, still there is some doubt as to the actual efficiency as exciting causes, of many of the circumstances enumerated as such. As Dr. S. remarks, no one of the conditions which in some individuals would appear to be the immediate agents of the epileptic fit, are found to be generally or necessarily so; they occur very frequently in other individuals without giving rise to any form whatever of spasmodic disease.

In many of the cases of what has been termed the eccentric form of epilepsy the importance of ascertaining the exciting cause of the attack is rendered evident by the fact that when this has been detected and removed the epilepsy has ceased.

"It would appear," says Dr. S., "more in consonance with observed facts to regard epilepsy as an affection invariably dependent upon some hitherto unexplained derangement in the nervous system, often dormant for years, and even for life, unless the exciting cause comes into operation. If this view be correct, a distinction between essential and non-essential epilepsy cannot be said to exist; but wherever a paroxysm has occurred, we should assume the same peculiarity of the nervous system to prevail in a stronger or feebler degree, and the difference would be mainly in the agent which roused this susceptibility into action. To revert to a former simile, the diathesis may be compared to combustible material of greater or less inflammability, which differs in the facility with which it will take fire, but will infallibly do so if a flame of sufficient intensity is brought into contact with it. Protect it from the flame, and the combustion will not take place. The same we constantly find to be the case in epilepsy; remove the exciting cause, and the fits will remain in abeyance, allow the flame to be approximated, and the combustible mixture in your patient's system will certainly take fire, the proximity necessary for the purpose constituting the main difference between two different subjects. I have seen this so frequently, that it is one ground why I would specially warn the young practitioner who acts upon these views from placing undue reliance upon the medicinal agents which he prescribes while giving other directions in consonance with the views just detailed. Thus I have again and again found that a continuance of the same active and restless mode of life pursued by a patient at the time of consultation prevented the pharmaceutical appliances from producing a satisfactory result. The patient has then been placed in other circumstances, or has withdrawn from the previous avocations, allowing body and mind the proper rest, and the exciting cause being withdrawn, the nervous system had time to recover its tone, and if not a permanent, still a temporary cure was the result—a cure to all intents and purposes, because it was shown that the epilepsy was under the control of external influences."

Prominent and characteristic as are the phenomena of epilepsy, morbid anatomy has failed in the detection of a single uniform lesion, whether of the cerebro-spinal axis or other organ, by the presence of which the functional disturbances which attend the disease could be satisfactorily traced to certain definite organic changes.

It is impossible, Dr. S. observes, to overlook the manifest relation which the state of nutrition and the blood exercises upon the nervous system in the

production of what are denominated nervous symptoms in disease; and of all the influences that we can trace in the production of epilepsy, we see none that operate so frequently as those which are connected with some derangement of nutrition. And yet there is no definite change in the excretions which can be shown to be a uniform accompaniment of epilepsy.

Many patients who have died after suffering for a long period from epileptic disease, present upon dissection various lesions, particularly of the brain—such, however, is far from being uniformly the case, and when it does happen, no definite relation between the lesions that are present and the epileptic phenomena can be traced. Similar lesions also have been detected in the body of such as never exhibited, during their entire lives, any epileptic symptoms.

Among the lesions that have been most frequently detected in the bodies of epileptics may be ranked perhaps hypertrophy and increased density of the brain. These morbid conditions, if any confidence is to be placed in the observations of M. Ferrus, are invariably present. Another very frequent lesion, according to Dr. Boyd, of England, is a want of balance between the weight of the two cerebral hemispheres. It was present, he informs us, in nearly all the cases he examined post-mortem. If the observations of Dr. Wenzel, of Mayence, were accurately made and are correctly reported, a diseased condition of the pituitary body and pineal gland is also to be viewed as at least a very frequent, if not an invariable lesion in cases of epilepsy. Dr. Wenzel found it to be always present in the epileptic, he does not pretend to say, however, that its presence is invariably attended by epilepsy.

A very excellent analysis of the various post-mortem appearances that have been detected in the bodies of epileptics is given by Dr. Sieveking, together with an inquiry into the probable relation of these lesions with the predisposition to, and actual induction of the epileptic paroxysms, and with the various morbid phenomena exhibited during, or in the intervals of the paroxysms.

We now come to the important question, what is the true theory of epilepsy? The answers which Drs. Sieveking and Radcliffe give are, though dissimilar in the terms in which they are expressed, pretty nearly the same in substance; both consider the disease to be produced by causes which impair the healthy condition of the blood, and augment the susceptibility of the nervous system to the impression of abnormal impressions. Both recognize epilepsy as an affection of the encephalon, and especially of the sensory ganglia, with secondary implication of the spinal cord. The control of the brain, according to Dr. S., being withdrawn, the spinal system acquires a preponderating action, as shown in the spasmodic action of various muscular terminations of spinal nerves. With Dr. Radcliffe the condition of the brain and spinal cord are alike due to a deficient supply of arterial blood, and according to a theory of muscular action adopted by him, the convulsive movements of epilepsy are caused by a failure in the supply of "nervous influence" to the affected muscles, in consequence of a failure in the action of the nervous centres.

It will be impossible for us to present any more than a brief outline of the views advanced in the two works under review, in respect to the pathology of epilepsy, and this we shall endeavour to do, as far as possible in the authors' own words.

Dr. Sieveking believes that, in the great majority of instances, the first attack of epilepsy is due to an irritation produced by derangement in the

amount or quality of the blood circulating in the brain. In a person predisposed we frequently find, he remarks, over-fatigue, a long walk, carrying heavy loads, prolonged mental exertion, the manifest cause not only of the first, but of many succeeding seizures.

In respect to the repetition and perpetuation of the disease, Dr. S. observes:—

"It is a fact familiar to every medical man, that an individual part which has once manifested a peculiar susceptibility is prone to take on diseased action again, and that a frequent occurrence of disease in a part renders treatment more difficult at each succeeding attack."

"In a disease like epilepsy, habit plays an undoubted and very important part. Every successive attack strengthens the habit, and renders the individual more obnoxious to future seizures; every arrest or postponement of a seizure is so much gain in favour of the patient, not only by avoiding the pain and risk of the isolated paroxysms, but still more by diminishing his future liability to the disease. Believing, as I do, that wherever we meet with epilepsy there is the same fundamental weakness of the cephalic nervous centre, and that, by repetition of the attack, the same ultimate results may be brought about, whatever the exciting cause may have been, the necessity of seeking by every means in our power to weaken, if we cannot succeed in breaking, the strong links which constitute habit, becomes an imperative law for the physician."

"In considering the theory of epilepsy," Dr. S. continues, "its relation to other diseases, and especially to those of a spasmodic character, must be borne in mind. There is much and powerful evidence to show that epilepsy belongs to a group of affections which are closely allied to one another, and hence exhibit many transition forms which have given rise to confusion in the minds of medical men. The eclampsia of early childhood, laryngismus, or spasm of the glottis, may be especially mentioned as belonging to the same category as epilepsy. The main reason why, in infants, the convulsive character is not so prominent as in children of a larger growth, would seem due to that very impressionability which gives rise to the nervous symptoms on a comparatively slight stimulus. Their muscles and the spinal nerves have not reached that period of robust development which maintains later; whilst the slightest interference with the organs of respiration, dependent, as in the cases adverted to, upon spasm in the superficial or deeper seated muscles of the neck, causes loss of consciousness. We constantly see the gradations from the merest crowing inspiration, to the most confirmed convulsive seizure in the same infant, while the recurrence of the well-marked epileptic seizure in the adolescent or adult is preceded in a sufficient number of times by infantile fits to justify the assumption of a close relation between the two."

With respect to the experiments of Dr. Brown-Séquard and his deductions from them in reference to the pathology of epilepsy, Dr. Sieveking remarks, that the seizures that were induced in them appear to have borne more the character of tetanus than of epilepsy. Such a state of hyperæsthesia as occurred in the animals operated on, Dr. Sieveking denies to be a feature of epilepsy in the human subject, in whom the evidence, to his mind, shows irrefragably the brain to be the organ primarily involved—the phenomena of the disease would seem, indeed, to show that it depended essentially on a deranged condition of cerebral nerve power, and to negative the supposition of its connection with spinal lesion.

The state of the blood, Dr. S. believes to exercise a material influence in the production of epilepsy. He thinks that the close alliance between epilepsy and scrofulous affections points in this direction, while, in the great majority of cases, circumstances have preceded the outbreak which notoriously tend to impoverish the blood, and exhaust both the vascular and nervous power.

"But," he adds, "although the disturbed polarity which induces the paroxysm most frequently depends upon exhaustive conditions, so much so that some writers, among whom I would specially mention Dr. Radcliffe, regard this class of causes as the sole indication for treatment; I am satisfied that the state of the blood need not necessarily be impoverished, but that various pathological conditions of the blood may be associated with the epilepsy."

Dr. S. believes that the immediate cause of the epileptic seizure may be a preternatural influx of blood upon the brain; he supposes, nevertheless, that, in the vast majority of cases, the patients are in a condition indicating a state of general anæmia, or a dyscrasic state of the circulating fluid.

"A state not certainly always, or even generally, to be measured by a physical standard, but no less recognizable by the physiological tests—the state of the skin, the eye, the tongue, the pulse, the stomach, the intestines, the mental functions. In most acute diseases, even, that we have to deal with, we find that a predisposition is generated by previous debilitating influences—intemperance, debauchery, scrofulous or syphilitic taint, hereditary lithiasis. Such influences necessarily deserve equal attention in a chronic and periodic affection like epilepsy; and it is impossible to disconnect such influences, even in a disease so peculiarly in the domain of the nervous system, from a blood-lesion."

Dr. Radcliffe believes that from defective action in the excretive organs, a diseased condition of the blood will be produced, which may concur in bringing about an attack of epilepsy. He believes that in every case of the disease there is a want of vigour in the circulation. That during the paroxysm there is impeded respiration, and an overloaded condition of the venous system generally. This condition of things being assumed; the inference deduced by him is, that the convulsive seizure is intimately connected with the want of a due supply of arterial blood to the cerebro-spinal centres. He denies that either venous congestion or arterial injection of the brain are in any way concerned in the production of epilepsy.

"No doubt," he remarks, "the veins of the brain and head generally are congested from a very early moment, but there is a moment antecedent to this, in which the death-like paleness of the face, in many cases at least, is a sufficient proof that the veins were emptier than usual before they became congested. Indeed, it may be supposed that this was the case in the majority of instances, if not in all, for there would seem to be no way of accounting for the instantaneous loss of consciousness and sensibility (which is in reality the first phenomenon of the fit), except upon the supposition of some sudden failure in the supply of blood to the great nervous centres. At any rate, the well-known anatomical difficulty is not the sole difficulty which has to be overcome before it can be supposed that Dr. Marshall Hall's hypothesis of *trachelismus*, or the prevention of the return of blood from the brain by the spasm of certain muscles in the neck, has anything to do with the causation of epilepsy."

Deficient activity of the nervous system plays, according to Dr. R., a most important part in the production of the disease. During the convulsion the state of the brain he sets down as one of coma. That is to say, during the convulsion, the state of the brain, regarded mentally, is one of extremest inaction. Such is also, he maintains, the condition of the medulla oblongata, the spinal cord—every portion, in fact, of the nervous centres. The morbid irritability of the muscular system—that state in which the muscles are said to be more apt to contract when irritated, and more prone to remain contracted when once they have contracted—is, according to Dr. R., dependent upon a deficient supply to them of nervous influence.

"There is then," he remarks, "no necessity to look upon this morbid state of irritability as an evidence of the existence of any peculiar condition in some

part of the nervous system, for thus interpreted, it only signifies a state in which the muscles are ill supplied with nervous influence. Thus interpreted, indeed, morbid irritability only becomes another name for inefficient action of the nervous system. The pathology of epilepsy, therefore, as deduced from a consideration of the phenomena belonging to the nervous system is in harmony with what had been already deduced from a consideration of the phenomena belonging to the vascular system, and the conclusion is precisely what was to be expected from the previous investigations respecting the physiology of muscular action. From these previous investigations it was to be expected that coma and convulsion might go hand in hand together; for muscular contraction, according to these investigations, is to be looked for when a failure in the action of the nervous centres causes a failure in the amount of nervous influence distributed to the muscles."

To understand fully the pathology of epilepsy advocated by Dr. Radcliffe, it will be necessary to inform the reader that, agreeably to the physiology of muscular motion adopted by him, *muscular contraction* is not the result of the *stimulation* or excitation of any property of *contractility* belonging to the muscle. That by the simple physical action of certain agents—electricity, irritation, nervous influence, etc., *muscular elongation* is produced; *muscular contraction* being simply the *physical consequence of the cessation of such elongation.*

However accurately the theories of epilepsy advanced by Drs. Sieveking and Radcliffe may be admitted to depict certain of the morbid conditions which concur in the production of the disease; however correctly they may be found to explain certain of the links in the chain of causation upon which the morbid phenomena exhibited by the epileptic patient from the period of his first seizure until the termination of his disease or of his life, depend; they cannot be received as affording a full and satisfactory solution of the entire pathology of epilepsy, the nature of the lesions upon which the disease depends, and why those lesions give rise to the particular morbid phenomena pathognomonic of it. For such light, however, as they are adapted to throw upon these interesting questions, small as this may be, the views advanced in the works before us, with the facts and arguments by which the accuracy of those views are attempted to be proved and enforced, deserve the notice and careful study of every physician.

A leading—perhaps the most important—result the physician hopes to derive from the discoveries he may be enabled to make in regard to the actual seat and character of the lesions upon which any given disease depends, and the causes to which those lesions owe their existence, is to enable him to fix upon the means best adapted for its prevention or its cure. We fear, however, that, in the case of epilepsy at least, no such result can be rightfully claimed for any of the theories, including those advanced in the two works before us, that have as yet been published; and that so far from its treatment being prompted and guided by an exact knowledge of the etiology and pathology of the disease, our acquaintance with its appropriate prophylaxis and treatment must still be acquired empirically.

If, as was laid down in the commencement of the present article, and the truth of the proposition is substantially admitted by Dr. Sieveking, epilepsy be viewed as an affection dependent upon a certain morbid condition of the nervous system, which renders it liable to act abnormally when subjected to certain causes of irritation which, in the absence of that morbid condition, exercise upon the nervous system no such influence, then the general indications to be pursued in our endeavours to prevent or cure the disease, are sufficiently clear. It must be, evidently, the leading aim of the physician

to prevent or remove the abnormal condition of the nervous centres, and to guard the patients from the sources of the irritation which is found to act as the exciting cause of the epileptic seizure. But though the means by which these objects are to be effected may be shrewdly conjectured, they can be ascertained only by a course of clinical experiments—by the results simply of experience.

We need not stop to inquire what the authors before us lay down as the proper treatment during the epileptic convulsive paroxysm. In no case can it be more than negative, and directed solely to guard the patient from injuring himself, or being injured by the convulsive movements of his muscles, and to abstract everything within our control, that may have a tendency to aggravate the fit, or impede its speedy cessation.

Romberg, Pritchard, and a few others, speak of compression of the carotids as a means of warding off a threatened paroxysm, and of producing a temporary relief of its violence, when present. From the decided testimony borne by Dr. Parry in regard to the beneficial effects of compression of the carotids in allaying pain of the head, sleeplessness and excitement in cephalic diseases generally, Dr. S. concludes that the operation is certainly deserving of an extended trial, inasmuch, "as the postponement of a fit, or even diminution of the severity of the paroxysm is a gain."

Dr. Radcliffe believes, on the other hand, that the evidence offered in favour of the measure is both scanty and inconclusive, and might be easily frittered away by any one who is disposed to be sceptical.

When the paroxysm is preceded by an *aura*, it is asserted upon the best of evidence that if this be, by any means, arrested before it mounts to the head, the accession of the epileptic fit will be prevented. Binding a ligature firmly around the limb in which the premonitory sensation referred to is experienced, between it and the brain, has been found, we are assured, effectually to ward off for the time being an impending paroxysm. The removal of a testicle, of a tumour along the course of a nerve, or of an entire limb along which the aura has been known to proceed, is said to have frequently effected an entire cure of epilepsy. Removing by the trephine a portion of the skull over any part of the brain ascertained to be suffering from mechanical irritation of any kind has, also, it is reported, resulted in the entire arrest of the disease. To such cases, however, undue weight should not be given. We are to recollect that, in very many instances the operations referred to have been performed, and by them supposed offending parts have been removed, without the slightest beneficial results.

So far as we are able to judge from the recorded experience of the medical profession in reference to the subject, the exhibition of no article included in either of the classes of remedies which make up our lists of the materia medica, has been found to exert any more than a very uncertain and limited control over the violence or frequency of the epileptic seizures, and has seldom exhibited any uniform and decided agency in causing their entire suspension.

A preliminary measure essential to the success of whatever treatment we may adopt for the cure of epilepsy, is the removal of the patient from the influence of all those circumstances, so far as they can be detected, and are under our control, which may act as predisposing or exciting causes of the disease, whether of a mental, moral, or physical character; while at the same time, by a well-selected, nutritive, and invigorating diet, pure air, appropriate occupations, properly regulated exercise, and the cultivation of

cheerfulness, hope, and confidence, we endeavour to improve the nutrition, the tone, and the healthful rhythmical action of the system generally.

Every epileptic should be examined fully, carefully, cautiously, as to his predisposition to disease, and with the view, also, to detect improper habits and vices and indulgences, incorrect modes of living, etc., as well as to discover any morbid condition that may be present in either of the organs of the body, in order that the proper remedies may be applied to counteract and change the first, and to remove promptly the latter. In the general correctness of these views both the writers under review coincide.

"In any case of epilepsy," Dr. Radcliffe remarks, "there is no question as to the necessity of ordering the habits of the patient in such a way as to save the strength as much as possible. There is no question as to the advisability of continence in sexual matters. There is no question as to the advisability of not taxing the brain with severe study. But there may be a question as to the correctness of the rule which is usually laid down with regard to bodily exercise. There would seem to be no ground for supposing that the epileptic had any spare energy which must be worked down by exercise, and, so far, this idea is confirmed by experience. More than once, I have found a patient begin to improve when he became careful to avoid muscular fatigue; more than once I have known a patient begin to retrograde, who began to try his strength too speedily."

Dr. Sieveking says that if he were to formalize the mode of treatment pursued by him, he would say that it consisted in local derivatives, or counter-irritants directed against cerebral congestion, in connection generally with roborants or tonics; the special manner in which the indication had in view in the employment of the latter is to be carried out being based upon the result of the inquiries made into the condition of the individual organs.

Intense and continued headache in the epileptic, whether as a precursor or sequel of the convulsive paroxysm, Dr. S. always meets by counter-irritation to an extent proportioned to the intensity of the symptom. Either blisters to the back of the neck, repeated, or kept open by the application of savine ointment, or setons or issues to the neck, are the means of counter-irritation usually employed by him. Dry cupping he has, also, in many cases found beneficial.

The abstraction of blood may, Dr. S. thinks, be demanded in sanguineous epileptics, residing in the country, but, as a general thing, he joins with those who deprecate bloodletting in those subject to epilepsy. Purgatives, he believes are demanded to remove from the bowels retained feces, or any other irritating matters that may be present in them, and also to restore certain physiological secretions. Mercurial purgatives, and those of a drastric character, he objects to, and advises the selection to be made from among those that are of a warm aromatic character.

"The costiveness," says Dr. S., "of many of our overworked and anæmic patients will be better met by a large dose of quinia, or by nux vomica or its alkaloid, than by a purgative draught. In some cases, possibly, even an opiate or a sedative will more readily induce a regular action of the bowels, by overcoming a spastic condition of the intestinal muscular fibre."

Dr. Radcliffe is opposed to every kind and degree of depletion in epilepsy, whether by venesection or by purgatives. He insists upon the necessity of a tonic and stimulating course of treatment, with a full diet of good substantial food, and a liberal allowance, at the same time, of beer, wine, coffee, etc. Dr. R. concedes, however, to counter-irritants the good effects that have

been ascribed to their use in epilepsy, especially such of them as excite inflammation without being attended by any exhausting discharge. They act, he thinks, not by overcoming congestion, the existence of which he denies, but by withdrawing some morbid irritability from a vital organ. He believes that it is as a counter-irritant, cauterization of the larynx, as proposed by Dr. Brown-Séquard, and practised by Dr. Watson, of Glasgow, and others, does good. The hint given by the first named gentleman, in pointing to the larynx and the locality in which *the aura* originates, as the sites in which the counter-irritation *may be* especially serviceable, Dr. R. believes may prove one of much practical value.

There are times, Dr. R. admits, in which the stimulant and tonic course of treatment must be suspended.

"If, for instance, the urine on cooling becomes thickened with lithates, not only may tonic and stimulant medicines have to be suspended, and the quantity of animal food and beer reduced, but a few grains of an alkaline carbonate, and a few drops, perhaps, of tincture of colchicum—I think I have seen much good from this addition in many cases—may be taken with advantage an hour before breakfast, for a few days in succession. Or, if the bowels become obstinate, it may be necessary to recommend more fruit or salad, more walking exercise, with enemas of cold water or brine, and so on. Or, if the action of the skin flags unusually, it may be well to advise the use of a few warm baths, in addition to the ordinary practice of sponging with tepid water. In a word, any of the many minor changes which are continually happening in the system will have to be recognized and met, and not only so, but no small part of the success in treatment will always depend upon the tact and promptitude with which such changes are recognized and met."

Dr. Sieveking speaks in commendation of turpentine, as a remedy in epilepsy, especially when the disease occurs in females, both on account of its primary action on the intestinal canal, and its secondary stimulating effect upon the uterus, when its regular functions are impaired. We have found equally good effects to result from the use of the turpentine in the male as in the female epileptic.

Dr. Radcliffe also bears testimony to the value of turpentine in cases of epilepsy generally; on account, however, of its nauseous taste, he has usually substituted naphtha, purified by redistillation. The following is a formula according to which he often administers it: ℞.—Naphthæ purificatæ, tr. humuli, tr. valerianæ, āā ℥ss; aquæ menthæ pip. ℥ss; aq. destillatæ, ℥j. M. for a dose. When chalybeates are indicated he has sometimes added from five to ten grains of the ammonio-citrate of iron.

As tonics in epilepsy, Dr. S. places the preparations of iron and of zinc at the head of the list, and indicates Allarton's steel biscuits as a very elegant form of administering iron, particularly to young children. They are very palatable, and will be eagerly taken even by the infant.

Of the different preparations of zinc Dr. S. prefers the sulphate on account of its solubility. It is best adapted, he thinks, to cases of what has been termed the centric form of the disease. It may be given in the form of pills combined with extract of gentian, or dissolved in infusion of valerian, or in other combinations indicated by the particular case. The valerianate of zinc and the valerianate of iron present combinations of the bases referred to with valerianic acid, which may be given also with advantage. By cautiously increasing the dose of the sulphate of zinc, the patient can be brought to take it in very considerable doses without any inconvenience.

Dr. Radcliffe has no faith in the anti-epileptic properties of zinc; iron, however, he has used as a fundamental element in the treatment of the

disease, for the last seven or eight years, and with the most encouraging results.

If steel, says Dr. Radcliffe, has done good in epilepsy, it might reasonably be expected that the same result would also be experienced from the use of quinia. It has been employed by several practitioners, among the rest, by Rostan and Piorry, and cases are on record in which the epilepsy is supposed to have been cured by it. Dr. R. has given it without much selection as to particular cases, and scarcely ever, he assures us, if ever, without benefit. He has usually prescribed, it is true, the quinia along with other remedies, but he feels convinced that to it some share of credit is due for the benefit that ensued.

"Among tonics," remarks Dr. Sieveking, "we must not forget to mention strychnia, which, in suitable doses, acts as a general roborant, and diminishes that irritability of the nervous system which prevails in persons subject to epileptic seizures. The extract of nux vomica in half grain doses three times a day, with extract of gentian, acts in a similar way; and it is worthy of remark that we often observe the sluggish state of the bowels associated with epilepsy rectified by the administration of the remedies just spoken of, in such a manner as to render the employment of direct purgatives unnecessary."

Dr. Radcliffe believes that, considering the smallness of the dose to which Dr. Marshall Hall would restrict the use of strychnia in epilepsy, the *modus operandi* of the article as shown by the researches of Dr. Harley, and the pathology of epilepsy, it is not likely that it will prove a valuable remedy in that disease.

The preparations of silver have failed, in the hands of Dr. S., to exert that influence over epilepsy which he was led to anticipate from the favourable reports of others. The verdict of Dr. R. is equally adverse to the claims that have been set up in favour of the salts of silver as remedies in epilepsy.

"It would be useless," observes Dr. S., "to attempt to lay down specific rules for the mode of administering the drugs already spoken of, since the general laws of pathology and therapeutics apply equally to the treatment of epilepsy as to any other disease; therefore, as a matter of course, the endless complications which may accompany epilepsy must be borne in mind, and the necessary remedies ordered accordingly. As long as an irritant of any kind resides in the system it would be next to useless to seek to counteract the spasmodic diathesis; the former must be first removed before we can expect successfully to combat the latter. The weak or diseased condition of any organ, though possibly not bearing any immediate relation to the paroxysmal affection, demands the physician's attention previous to, or in conjunction with, the radical treatment to be adopted. To give a detailed account of all the circumstances that might arise here, would render necessary a review of the whole domain of pathology."

The ordinary antispasmodics exert, according to Dr. Sieveking, no influence over the epileptic paroxysm. A similar experience would appear to be that of Dr. Radcliffe also.

In regard to narcotics, the first-named writer thinks we would do well to employ them more frequently than we do at the commencement of epilepsy, as we can scarcely doubt that during sleep an irregularity in the action of the nervous system supervenes, such as may be met by soothing agents. He condemns opium in these cases, preferring morphia and its salts, hyoscyamus, conium, belladonna, hydrocyanic acid, and, in some cases, perhaps chloroform.

Dr. R. has rarely found camphor, in doses of from two to six grains, either alone or in combination with either quinia or iron or both, to fail in

doing good. Chloric ether and Hoffmann's anodyne would seem to him to be also adjuvants of no small value. The first he has often given in half drachm doses, either alone or in combination with steel, quinia, or naphtha. When some temporary stimulation is called for, he has found the chloric ether, in drachm doses, with or without a little warm wine and water, a very effectual remedy. There is no better means to quiet the agitation so frequently the precursor of an attack in many of those cases which are partly epileptic and partly hysterical in their character.

The aromatic spirits of ammonia, also, Dr. R. pronounces a valuable adjuvant that may often take the place of chloric ether with advantage.

With respect to indigo, so strongly recommended by Professor Ideler, of Berlin, and Dr. Rodrigues, of France, Dr. Sieveking thinks that we are warranted in employing it when other means fail. With the effects of the article in epilepsy Dr. Radcliffe has no experience.

Dr. S. has administered the *cotyledon umbilicus*, or navelwort, in numerous cases of epilepsy; and generally speaking, the patients have appeared to be benefited by doses of from thirty grains and upwards of the extract, three times a day. He thinks the remedy worthy of some consideration. Dr. R., on the other hand, says, that there would seem to be "nothing in experience, and less in the simple itself," to warrant any hope of benefit from its use, except that which arises from the exercise of the imagination of the patient.

With regard to the value of *tracheotomy* as a remedy in epilepsy, Dr. Radcliffe believes that it is impossible to arrive at a sound conclusion until there is a greater amount of evidence furnished us.

"Still," he remarks, "it is evident that this measure does not realize all the original hopes of Dr. Marshall Hall. It does not prevent convulsion. It does not always, perhaps not usually, make the convulsion slighter. It does not prevent danger, for, as I have shown elsewhere (*London Lancet*, May 14th, 1853), of the few patients upon whom the operation has been performed, three have died either in the fit or in connection with the fit; and of the three, the opening in the windpipe was free from all obstruction—at least in one. Under these circumstances, therefore, it becomes a question whether the supposed benefits of the operation are sufficient to counterbalance the associated inconveniences and dangers, even where, what rarely happens, the asphyxial symptoms are in any degree dependent upon spasmodic closure of the glottis."

The remarks of Dr. Sieveking on the hygienic and moral treatment of epilepsy are peculiarly interesting. Strongly should it be urged upon the mind of the practitioner that moral and hygienic remedies are equally efficient in promoting, and moderating, and curing the disease as are the resources of the materia medica, in many cases even more so. To direct aright our remedial measures, every influence to which the patient affected with epilepsy may be exposed should be carefully investigated, and so directed, managed and controlled, if within our reach, as to promote the health and vigor of the entire organism. The air he breathes; the water he drinks; the clothes he wears; his ablutions; his daily occupations and habits; his amusements; his food and drinks; his mental and moral habitudes; the moral influences by which he is surrounded, and his pecuniary, civic and business condition and relations, all should be inquired into, and, so far as they require and admit of it, changed or modified in accordance with the precepts of a correct hygiene. Such a course is essential as well in reference to the prevention as to the cure of epilepsy.

The sketch presented by Dr. Sieveking of the moral and hygienic treat-

ment of patients predisposed to, or actually labouring under epilepsy, is a very well-defined, ample, and able one; correct in the principles upon which it is based, and sound in the remarks it contains in reference to the employment of special moral and hygienic means in the varying circumstances and aspects under which the disease presents itself.

Dr. S. sums up his exposition of the moral and hygienic management of epilepsy—a subject that, as he justly remarks, demands on the part of the physician an intimate appreciation of character and of the relative influences of psychical and physiological functions—with the caution to the practitioner, to examine every case on its own merits—to decide upon the treatment to be adopted according to the conclusions thus carried out, and to consider attention to nothing which may have a bearing upon the social, or moral, or physiological circumstances of the patient as beneath the dignity of science.

We commend both the works before us to the favourable notice of our readers. We take pleasure in saying that from an attentive study of them —but especially of the treatise of Dr. Sieveking—we have been much gratified and instructed. D. F. C.

ART. XIV.—*A Treatise on Gonorrhœa and Syphilis.* By SILAS DURKEE, M. D., Fellow of the Massachusetts Med. Soc., etc. etc. With eight colored plates. Boston: John P. Jewett & Co. Cleveland, Ohio: Henry P. B. Jewett, 1859. Octavo, pp. 431.

THIS volume, the author informs us in the preface, is constituted in great measure by a Boylston prize essay on "The Constitutional Treatment of Syphilis;" which essay, though modified to a degree that deprives it of its original identity, is believed to have had its intrinsic merits materially enhanced. The solicitations of others, it is declared, have prevented him from allowing the original manuscript to sleep undisturbed. We are informed, moreover, that he has devoted, in public and private practice, more than thirty years to the therapeutics of syphilis and kindred disorders.

The importance of the subjects treated upon in this work, on account not only of the character of venereal diseases, but also of their extreme frequency, together with the very unsettled state of medical science in regard to them, makes us turn eagerly towards any additional information promised respecting them. A calculation made by a distinguished English writer, from estimates he pronounces to be *ridiculously low*, shows that more than a million and a half of cases of syphilis occur every year in England, Wales, and Scotland. Of the out-door patients of the London hospitals, nearly one-half seek relief there for venereal diseases; of this number nearly one-half are women and children. In this country we have no means of forming any direct estimates; but we may infer, as passions are as strong here as elsewhere, and under no firmer control, that these affections are here equally common.

What positive knowledge do we possess in regard to these diseases not only frightful in themselves but frightfully common? There is very little,

indeed, that can be considered as indisputably determined, in regard either to gonorrhœa or to syphilis; and this is true of their origin, their cause, their pathology, and their therapeutics; in fact of everything connected with them. However well assured any one may suppose himself to be of the correctness of his own opinions on these subjects, no matter what these may chance to be, yet he cannot but be conscious that many imposing authorities may be cited against him. Is gonorrhœa a specific affection—is it succeeded at times by constitutional affections—is syphilis communicable by hereditary transmission—are secondary symptoms contagious—is there but one syphilitic virus—is syphilis conveyed by vaccination—whence does it come—does it ever originate now—does it remain forever in the system—how must it be treated—is mercury a specific—what is true of syphilization? These are a very few of the questions which we must all be desirous of seeing definitely settled. If any one thinks himself competent to do this, let him but read the recent debates in the French Academy, and see how widely different, how totally irreconcilable, are the opinions of men old in experience and wisdom. For twenty-five years Ricord held the same opinions, verifying them, as he believed, every day, and now he finds, most unwillingly though it be, that he must abandon them. We therefore welcomed a work from one who enjoys so high a reputation, as does the author of the present, and who for thirty years has been investigating these disputed subjects. He tells us, moreover, expressly, in the preface, that in some of the unsettled and disputed points "he has ventured to offer a helping hand, and to interpose a word of reconciliation, especially in the field of therapeutics"—the chapter devoted to the consideration of secondary syphilis, where no primary accident has preceded, is believed "to leave no ground at all for controversy or doubt"—he hopes that the diagnosis of the various specific affections has been so dwelt upon that the physician will be aided in investigating obscure and perplexing cases; he is evidently highly gratified by his delineations of "the characteristic features assumed by the various cutaneous affections resulting from the venereal poison," and he is of opinion that the occurrence of blennorrhagia in the male, as resulting from leucorrhœa or from the menstrual fluid, a long-standing theme of controversy, "has been disposed of in a manner that will receive the approbation of his readers generally."

The first chapter of Dr. Durkee's work treats of blennorrhagia, at least of blennorrhagia in the male subject; a separate chapter, the sixteenth, being devoted to blennorrhagia in the female. The word blennorrhagia, it must be said, in order that there may be no misunderstanding in the matter, is used by Dr. Durkee as synonymous with gonorrhœa, clap, and urethritis. The statements in the preface lead us to form considerable expectations in regard to this chapter, or that portion of it a least which treats of the causes of gonorrhœa. Dr. Durkee believes there is an affection—blennorrhagia *simplex*—which is produced by a variety of causes, such as the menstrual flux, leucorrhœa, certain articles of food, as asparagus, pepper, salted meats, spirituous liquors, beer, and coffee; masturbation, rheumatism, and gout, it is said, "will likewise occasion gonorrhœa." It must be remarked here that by using the word gonorrhœa to represent both blennorrhagia *simplex*, and also another affection which he styles *malignant gonorrhœa impura*, Dr. Durkee has rendered it very difficult to decide what are his opinions. The affection he styles malignant gonorrhœa impura he tells us can alone be propagated, and is distinguished from the other by greater severity of symptoms.

At page 6 we read as follows:—

"During a practice of now thirty years, I have had scores of patients who have pretended that their urethritis might have been derived, or probably was derived, from the vaginal or uterine secretion now alluded to [leucorrhœa]; but I have never seen any evidence that convinced me of the fact. My faith in the power of leucorrhœal secretion as a source of blennorrhagia in the male, is scarcely equal to a grain of mustard seed; and I usually turn a deaf ear to all such *specious* explanations. I am unable to recognize this antecedent as the procuring cause of such an event. The subject, however, is one of which no man has the key of absolute knowledge. It must, from the very nature of things, always remain a matter of opinion. My own coincides with that of Sigmund—*that gonorrhœa alone produces gonorrhœa.*"

We have formed a different opinion from this, and we do not find sufficient reasons to change it in what Dr. Durkee has written on the subject. We were about to declare that he had not disposed of the subject in a manner to meet the approbation of his readers generally, when we found further on an opinion which coincides exactly with our own; and, if we be not mistaken, with that of the majority of the profession. We read (page 157):—

"For it must be admitted that the vaginal secretions of some females, who are perfectly chaste and entirely free from all gonorrhœal taint, *may* give rise to urethral inflammation and blennorrhagia in *some* men. Leucorrhœa has the credit of doing this. The same power is claimed in behalf of the normal menstrual fluid. There are not a few able writers who have implicit faith in the ability of both these secretions to provoke a blennorrhagic urethral discharge. Candor, indeed, compels me to go further, and to admit that an acrid condition of the ordinary mucous moisture—the epithelial exudation from the uterus or the vagina—may generate a gonorrhœa in the male."

If the expression of opposite sentiments in different portions of the work be a satisfactory disposition of the subject, we must admit that the author has accomplished his object as given in his preface.

Following this first chapter come fifteen others, treating respectively of the treatment of blennorrhagia in the male, gleet, balanitis, orchitis, herpes præputialis, eczema præputialis, irritability of the bladder, excoriations, urethral pains, spermatorrhœa, gonorrhœal ophthalmia, ophthalmia neonatorum, gonorrhœal rheumatism, vegetations, and blennorrhagia in the female.

As will be perceived, the book contains more than was promised by the title—"gonorrhœa and syphilis." On the other hand, we look in vain for an account of inflammation of the prostate, for a description of cystitis, in fact, for any mention of an extension of the inflammation farther than the urethra; and among the consequences of gonorrhœa we do not even find stricture of that canal.

We regret to have to say that we have found little calling for particular commendation in any of these chapters, while we discover in them not a few deficiencies and inaccuracies. In the one upon balanitis, there is a plan of operating for circumcision described as being as good and simple as any, which, at least so far as we comprehend the description, seems to have slender claims to favour. The procedure is:—

"To slit up the skin and mucous membrane as far as the reflection of the latter, and then cut away the frænum as far as practicable. The constricted part, which is near the edge, is removed in a circle, and the bleeding being stopped, the skin and the mucous membrane are brought together by stitches, and covered with collodion."

The remainder of this volume, containing about 260 pages, is devoted to syphilis. Here, as in the previous portion, there is a want of arrangement of subjects which renders the reviewer's task neither agreeable nor easy.

The length of time that may intervene between the application of chancrous virus and the formation of the chancre, is said by Dr. Durkee to vary from twenty-four hours to ninety days. This difference he attributes to the condition and anatomical structure of the part on which the virus is deposited :—

"If this spot happen to be denuded of its cuticular or epithelial covering, inoculation will show itself, without doubt, at an earlier moment than it would if there were no such abrasion" (p. 181).

We are quite confident that the cuticular covering, or the healthy skin as we should call it, would altogether prevent any action of the pus of a chancre, and we are nearly equally confident in the efficiency of the healthy mucous membranes. In regard to them, it may be, as is maintained by some surgeons, that the pus is so virulent that it will cause erythema and then superficial ulceration, and thus inoculation of the pus; but this is by no means certain. In fact, in the chapter entitled "Secondary Symptoms without Primary," one to which in the preface particular attention is directed, Dr. Durkee is disposed to maintain "that the primary syphilitic poison is insoluble, and that it will not act through a continuous membrane; and that the poison of secondary syphilis, on the contrary, is soluble and acts—" (p. 290). At all events, as respects the time required by the pus to manifest its poisonous action upon the tissues, we should be glad to have been informed when and under what circumstances it required ninety days. The opinion is given, distinctly and simply, without any authority therefor.

It is stated, moreover, that "we have abundant proof, both from natural and artificial inoculation, of the contagiousness of the chancrous substance, and also, as I believe, in some instances of secondary venereal matter." We cannot adopt this opinion of Dr. Durkee, but must believe in the communication of secondary syphilis under certain circumstances, as from parent to offspring, from nurse to child, from child to nurse, from man to woman through the medium of the fœtus, though we know of no abundant proof, "from natural and artificial inoculation," of the contagiousness of secondary venereal matter. On the contrary, it has been abundantly proved by M. Ricord that by *inoculation*, either natural or artificial, secondary syphilis is never communicated. Unfortunately for M. Ricord, he supposed that because secondary syphilis was not communicated, as primary syphilis is, by inoculation, that it was not communicated under any circumstances—that it was never contagious. The views of M. Ricord might be unhesitatingly accepted if all the phenomena of syphilis were capable of being fully tested by the way of inoculation; unfortunately they are not, and it was by assuming that they are that he deduced conclusions, which must now be held to be erroneous. We know of no instance where secondary syphilis is inoculated, unless it be in vaccination, and here the valuable researches of Mr. Whitehead (*On the Transmission from Parent to Offspring of some Forms of Disease, and of Morbid Taints and Tendencies:* London, 1851) rather incline us to believe it very probable that it is sometimes communicated in this operation. This very interesting and most important subject is not mentioned by Dr. Durkee.

A very important question in the treatment of syphilis is the length of time that may intervene between the period of exposure and the infection of

the system. Hunter thought that to excise or cauterize a chancre a month after its first formation was sufficient to prevent secondary symptoms. Ricord teaches that the patient escapes if the chancre be destroyed before the fifth day, counting from the moment of exposure to contagion. Acton limits the time to three days. Dr. Durkee very truly gives it as his opinion that "it seems rational to suppose that the chances of constitutional infection are, *cæteris paribus*, in proportion to the duration of the local disease, and, therefore, the earlier we destroy any erosion or pimple induced by exposure, the more successful will the effort prove, and the less occasion will there be for any special constitutional treatment." It would, however, have been more satisfactory if the author had stated the shortest length of time at which the destruction of the sore by caustics had proved inefficient.

When the lesion consists in an abrasion, nitric acid is the caustic generally applied by Dr. Durkee. If a solitary vesicle, pimple, or pustule is to be destroyed, he sometimes selects the potassa fusa. Ricord, he says, formerly employed nitrate of silver, but now recommends the Vienna paste and the monohydrated nitric acid. What Ricord has been using of recent years is a soft paste composed of sulphuric acid and charcoal, which in many respects is preferable to any other application. Before resorting to this, Ricord used to employ the acid nitrate of mercury, or the actual cautery.

After the destruction, or the *demolishing*, as Dr. Durkee styles it, of the chancrous sore, what course of treatment should be adopted? In case the sore had become indurated, with an accompanying cluster of hardened glands in the groin, there can be no hesitation as to treating the patient constitutionally; but when a doubt may exist as to the infection of the system, what should be done? It will scarcely be possible, from anything that Dr. Durkee states in this work, whether as to the time of incubation, or as to the symptoms, to decide positively, or with an approach to reasonable certainty, as to whether a patient has a sore that has already infected the system or not. According to Dr. Durkee:—

"If the abortive plan of treatment has been seasonably executed, to the extent of completely demolishing a chancrous sore, we are warranted, generally speaking, in the conclusion that its poisonous element is destroyed also; and a resort to mercurial remedies will be uncalled for" (p. 188).

This is very well, had it been stated what might be considered as reasonable, and what may be exceptions to the general rule; at one place, indeed (p. 183), we are told: "It is admitted that the destruction of chancre, at the earliest moment of its existence, does not always prevent general infection." However, the proper course to pursue in cases of doubt is a question the surgeon is often called upon to decide.

We read at page 209:—

"If a man present himself with a sore having a hard base, this sore being the result of a suspicious connection had a few days previously, the temptation to prescribe mercury at once is very strong, provided the practitioner designs to trust to this remedy at all; and yet, the advice to defer the employment of mercury is good. The induration may be like that met with in acne, and not the persistent, cartilaginous mass, which constitutes the floor of the true Hunterian chancre."

At page 196, again, after finding it stated that though sometimes mercury may be dispensed with, yet at others it is most useful, we read that for the cure of primary venereal sores:—

"It would, therefore, seem to be wiser policy to anticipate them, in the outset,

by the timely and careful use of mercury, rather than trust to a code of practice which may not in all cases secure the desired results, without an appeal to some mercurial preparation."

We ourselves would not give any antisyphilitic remedies in a case of a doubtful nature, but treat it as a simple sore; for it is of the utmost importance that the patient should know positively whether or no he is infected by the poison, and if a specific medication be administered, it cannot be determined whether the absence of secondary symptoms be owing to the temporary effect of treatment, or to the nature of the primary lesion.

In the administration of mercury, Dr. Durkee very truly teaches, that it is never requisite or desirable to salivate. He expresses himself as follows:—

"The venereal poison cannot be drawn into such an unnatural current, and through this be piloted out and disembogued from the system. The patient cannot spit out the disease. To attempt its elimination by establishing an artificial drain through the salivary apparatus, would be like beating the air with a feather with a view to expel from it the miasm of yellow fever. In both cases, the poison is endowed with a sort of ubiquity; in the one, pervading the human constitution; in the other, that of the atmosphere."

Of the preparations of mercury, Dr. Durkee appears to prefer the bichloride; we say appears, because we are unable to determine positively his opinion. He states, at all events, that for more than three-quarters of a century it enjoyed the confidence of the most distinguished members of the profession in this country and in Europe, and that "it is certain that all the antivenereal qualities which belong to any of the modifications of mercury, or to any of its combinations with other ingredients, exist in the greatest simplicity, uniformity, and purity, and in an eminent degree in the corrosive sublimate." In connection with this subject it is stated that what was worthy of confidence once, is worthy of that distinction now; that time has not modified the nature of the venereal poison, nor has a change come over the organization of the human system. We are not called upon here to disprove or to prove that changes have taken place in the human system, but we cannot doubt that the nature of the venereal poison has been very much modified in the three centuries and more that it has existed in the world. It is, most undoubtedly, no longer so virulent a poison as it once was.

Dr. Durkee states that the protiodide of mercury, the preparation we prefer ourselves to any other, must never be administered with opium, for this narcotic counteracts its effects. He says:—

"If opium be given in combination with the protiodide, the therapeutic qualities of the latter are completely neutralized, and therefore it should be prescribed in an uncombined form. Biett made this discovery" (p. 322).

This is to us a novel statement, and one which our experience leads to believe to be entirely erroneous.

The length of time for which the mercurial preparation should be given is not stated by Dr. Durkee. He says that patients with indurated chancre, whether accompanied by bubo or not—an indurated chancre, of the kind here meant, is *always* accompanied by induration of the inguinal glands—should continue the bichloride for several weeks.

In the chapter upon the constitutional treatment of chancre are several pages devoted to the subject of syphilization. These contain a history of the experiments of Auzias-Turenne, which contains some inaccuracies. Mr. Auzias-Turenne is said by Dr. Durkee to have communicated a true chancre

to monkeys, rabbits, cats and horses. Syphilization is denounced, and the demoralizing associations and consequences connected with it are declared to be sufficient to consign it to unqualified condemnation, without entering into any discussion of the real truth or fallacy of the doctrines broached by its advocates. This virtuous indignation may be very consonant with our feelings, but it may be doubted whether our *feelings* should be allowed to decide a scientific question, and one too supported by men of such high character as are to be found advocating the doctrine of syphilization. A reviewer in our respected contemporary, the *British and Foreign Medico-Chirurgical Review* for April, 1857, p. 325, treats the subject far differently; indeed, he asserts that the advocates of syphilization have established a claim on the profession to a fair trial of their system. He states further, that—

"It is certain that remarkable results have been obtained by this mode of treatment, that cases of inveterate secondary affections have been to all appearance effectually relieved, nay, we may say, completely cured, while the number of relapses, in comparison to those known to occur after the usual mercurial course, has been extraordinarily small."

We are not citing these passages, be it well understood, for the purpose of recommending syphilization, but in order to justify, by what respectable authorities have said on the subject, our own opinion as to the mode in which Dr. Durkee has disposed of it.

The chapter devoted to phagedænic chancre is a good one. It is hardly correct however, to define this form of chancre as being "the result of acute inflammation unsuccessfully treated." It is rather the consequence of some local or general condition—local, as strangulation, œdema, or bad dressing—general, as debility, excesses, or continued mercurialitis. Those who have used the potassio-tartrate of iron in this affection, will willingly corroborate all the praises bestowed upon it by Dr. Durkee. He is, we think, mistaken as to its having been first employed by Ricord; it had been previously used, but he first gave it in very large doses, frequently prescribing six drachms in the course of the day. In advising its local application to the sore, it would have been well to notice also, that it gives to it a very dirty and discouraging appearance.

At the beginning of the chapter upon bubo, we are told that a few well authenticated cases of *bubon d'emblée*, or primitive bubo, have been met with. "Ricord mentions eight; Mr. Erichsen has seen one; Mr. Lane a few, and so on." In a note it is added, that "M. Ricord, it is said, now denies the existence of the primitive virulent bubo." It is strange to see this well-known opinion of Ricord cited in this manner, and as hearsay evidence. The non-occurrence of primitive bubo is a fundamental point in all the teachings of this great syphilographer. The various modes in which the lymphatic glands in the groin are affected by syphilitic sores, and the important indications to be deduced therefrom, are not so fully described in this chapter as they should be. For the purpose of endeavouring "to annihilate a bubo," as it is termed by Dr. Durkee, he prefers to remove the cuticle over the swelling by means of a blister about two inches square and then to dress the denuded surface with mercurial ointment, to which one-sixteenth of the quantity of powdered muriate of ammonia has been added. When pus has formed we are told that the lancet affords the best method of giving free exit to it; but the mode in which the incision or incisions should be made, a matter of great importance, is not described.

In the chapter entitled "secondary syphilis," the time during which the

poison introduced into the system may rest dormant, or not manifest its presence by any observable symptoms, comes up for consideration. It is well known that Ricord teaches that, in cases where no mercury has been given, if secondaries do not make their appearance before six months, they never will. Sigmund, an excellent authority, is still more consoling, for he declares that if a patient does not exhibit any induration at the seat of chancre, any enlargement of the glands, or affection of the skin, or mucous membranes, for three months, he may be pronounced as permanently cured. The period of the latency of the poison, however, according to Dr. Durkee, is wholly uncertain and indefinite. It has been known, he says, to appear in a few weeks, and he gives a case that occurred in his own practice, where the interval of time between the primary disease and the secondary cutaneous affection was twenty years! No mercury had been given in this case, by which those who so wish might account for the delay. Another case is appended to this, "as not without instruction, although the time between the primary chancre and the consecutive lesions on the skin was *only* eleven years." We can scarcely believe that in the course of eleven and of twenty years these two men had never been exposed to contagion again, and we must say we are not credulous enough to allow any weight to these cases. One of the men is described as thirty-six years of age, remarkably stout, florid complexion, full face, and as leading an active life as an engineer on the western waters.

As has been mentioned before, the chapter devoted to the occurrence of secondary symptoms without primary, is one to which Dr. Durkee, in his preface, invites particular attention. In a characteristic sentence, he says:—

"If the reader finds himself still roaming in the barren realms of scepticism, let him pause at least, and in an unbiassed and philosophical spirit, listen to these facts—those contained in this chapter—as admonitory voices to his incredulity, and let him glean therefrom a lesson of wisdom and prudence."

Among these facts from which we are urged to glean, are five cases that occurred in Dr. Durkee's own practice. We will admit that in all these cases the affection was truly syphilitic, and merely give the evidence brought forward by Dr. Durkee, as to the non-existence of any primary symptom. The first case is a woman, twenty-four years of age, who had been married eight months; her husband had the venereal complaint about the time of his marriage; secondary syphilis showed itself on her three months after the marriage; "that this woman ever had primary symptoms in the organs of generation, there was not a particle of evidence." We are not told whether pregnancy had ever occurred; if it had, there could be no difficulty in accounting for the transmission of secondaries from the husband, for all are forced now to admit that this does take place through the fœtus. Neither are we told what venereal affection the husband had—it may have been primary, for all we can learn from what is said about it—nor are we told what was the evidence of the woman's never having had any primary symptom in the organs of generation; were primary symptoms looked for there, and when? after the lapse of five months it would be difficult to find them in the vagina. The second case is that of a young, unmarried man, whose secondaries—eruptions on the skin—had existed for twelve months; "he frankly admitted that he had been on intimate terms with sundry girls of the town, but had never, to his knowledge, had chancre or any other trouble on the penis or in the groin, nor had he ever had any suspicious urethral discharge or soreness." The man could readily have had an indurated chancre on his penis without ever being aware of it—and

granting that none had ever formed there, what proof have we that all the rest of the body had remained equally free? We are, at the present time, treating a young man with undoubted secondary syphilis, who never had "any chancre or any other trouble on the penis or in the groin;" these parts were carefully examined, moreover, long before the secondaries had lasted twelve months, so that all traces of indurated chancre could not have disappeared, as in Dr. Durkee's case; there is no doubt in the case we relate, that no chancre had ever existed about the privates. In the latter, however, there had existed a chancre—indurated, of course, as they always are in that position—situated on the forehead, about the inner part of the left eyebrow. This person recollects that while in some one of the Italian cities, we think it was Naples, he passed the night with a prostitute, but took every precaution, so far as washing the penis is concerned, to avoid infection; unfortunately, however, he had on his forehead, a boil that had commenced in Egypt, and was not quite healed; and he recollects distinctly that during the night in question, the small plaster covering this sore fell off many times, and required to be replaced.

The third case is that of a "frail young girl" who had been troubled for more than two years; "she stated that she never, to her knowledge, had had primary symptoms." This case needs no comment. The fourth case had already been suffering for six years when Dr. Durkee saw her. This patient was married in 1828 to a man who had had a chancre one year before; she never became pregnant; at the expiration of twenty years secondary accidents—what they were is not mentioned—displayed themselves in him for the first time, and four years afterwards, the woman found herself affected with what Dr. Durkee pronounced to be syphilitic symptoms.

"The patient was an excellent and highly intelligent lady, and her statements were entirely reliable. She said that she was not conscious of having had any complaint in any portion of the genital system during her whole life."

This case, like the preceding one, is manifestly wholly inconclusive.

The fifth case is that of a married woman, thirty-four years of age, the mother of two healthy children. She had been laboring under a tubercular eruption for eighteen months. "She reported that she has never experienced any morbid symptoms in the genito-urinary organs." Nothing is said about the husband in this instance—where does Dr. Durkee suppose the disease came from, or did it originate in this patient? We should like to know the ages of the two healthy children, with reference to the time at which the syphilitic eruption made its appearance; they may have been born before their mother was tainted. Besides the living children, had there been any miscarriages? These questions would have to be answered before we could go any further in such a case as this. At page 345 another case very similar to this is recorded, where Dr. Durkee wishes to believe that the woman had primary chancre, and does so, though she denied it stoutly. *Voluntas pro ratione stet.*

These five are all the cases Dr. Durkee has recorded, as having occurred to him in the course of thirty years. Far from their settling the question, or "their leaving no ground at all for controversy or doubt," we cannot admit them to possess any real value or weight whatever.

The rest of this chapter on the occurrence of secondary symptoms without primary, is occupied with a few facts and with the report of several opinions and discussions as to the transmission of the virus from nurse to

infant, and *vice versa*. That an infant may infect the nurse by inoculating the nipple, is, we think, abundantly proven. The communication of the disease from the nurse to the child during lactation, is certainly more rare.

From a report of some recent meetings of the French Academy of Medicine, it is evident that M. Ricord has changed his opinions on these points, and acknowledges that in this manner, secondary symptoms may occur without primary. A few years since he wrote as follows: "I have for many years had a number of nurses at the Hôpital de Midi, and I have often given them children to suckle, that were sent to me from the Maternité, with secondary affections. Never, so far as my observations extended, were these nurses infected." "On the other hand, nurses with secondaries, but no primaries, never affected children." It is certainly remarkable that a man of science and one who has long possessed unequalled opportunities for observation should find his opinions, the accuracy of which he had been testing, and proving for years, to be incorrect. The facts were always the same; why, for so many years, could he not interpret them as he has since done? This to us is an interesting problem in the history of syphilis—this change in the belief of M. Ricord.

A good deal of space in Dr. Durkee's work is devoted to the consideration of cutaneous syphilitic affections. Some seventy pages are thus occupied, divided into separate chapters, treating respectively of syphiloderma erythematosum, papular, squamous and tubercular eruptions, and syphilitic pustules. This is the best portion of the book. The eruptions themselves are well described, and the treatment recommended is, generally, satisfactory. We are particularly pleased to see so great stress laid upon the deficient sensibility of the skin in syphilitic eruptions. Most writers have remarked the absence of itching and burning pains in these affections, but they have not attached to it the importance it deserves in a diagnostic point of view. The prominence given to the use of baths, medicated or otherwise, in their treatment, is, we are sure, well deserved. The style, however, of this part of the book, is not less obnoxious to criticism than that of the preceding. For example, the chapter, entitled "Syphilodermata," opens with the following paragraph:—

> "The plastic hand of 'nature in disease' scarcely acknowledges any limit to the variety of forms which she is able to produce from a few pathological types. Especially is this true, when the human skin is selected as the chart, upon which her mysterious operations are delineated. I know that in the mind of the general practitioner great confusion, obscurity, and doubt sometimes overhang these morbid phenomena like a thick cloud. I know also, to some extent, that, by patient study and critical observation, the clouds can be removed, and the darkness give place to light."

For the purpose of illustrating the text, eight coloured plates have been furnished; one of them, representing an exceedingly well-marked case of "rupia prominens syphilitica," answers as frontispiece to the volume. The advice of "the ancient surgical celebrity," quoted by Ricord, in the preface to his *Clinique Iconographique*, we will quote again for the benefit of all who may come after Dr. Durkee: "*Gardez-vous d'ajouter de nouvelles images à celles qui encombrent déjà la science, et qui ne font le plus souvent que la défigurer.*"

Our author devotes separate chapters to alopecia, ulcers of the tongue, syphilitic diseases of the nostrils and nasal fossæ, and syphilitic iritis. Following them, comes a chapter, entitled "Tertiary Syphilis," under which form are placed gummy tubercles, syphilitic sarcocele, and diseases of the

periosteum and bones; treated of in separate chapters. The propriety of placing syphilitic sarcocele here, is not manifest from what Dr. Durkee says about it. He tells us that "the disease has been known to appear at the same time with primary chancre, and in connection with the profound abnormal phenomena that attack the periosteum and bones." Of course, it may appear at the same time with primary chancre; and so also may the profoundest of the abnormal phenomena attacking the bones, but neither of them are ever caused by the coexisting primary chancre. The position of syphilitic testicle in the series of affections caused by the venereal poison is as well determined as that of any other. It has never been seen before the fifth month following the primary chancre upon which it depends. This position of syphilitic testicle, as intermediary between secondary and tertiary accidents, is important, in a therapeutic point of view, because a combination of the remedies, most useful in both stages, is oftentimes required before the treatment proves successful. The description given of the changes that take place in the testicle, as revealed to the sense of touch, would not enable any one to recognize the disease. Following Sir Astley Cooper, he tells us that, "now and then, a slow process of foul, unhealthy suppuration is set up." At the present day no one sees suppuration in a syphilitic testicle. It is strange, too, to meet with a description of syphilitic sarcocele, in which no mention is made of the general presence of water in the tunica vaginalis.

The last chapter in this work is entitled "Infantile Syphilis." In it Dr. Durkee treats both of congenital syphilis or syphilis transmitted by inheritance, and of syphilis acquired after birth, during infancy; two subjects to which, of late years, great attention has been paid by medical men. In regard to the latter subject, all that is said, is, that infection may, though this is probably very unfrequent, be communicated during parturition by the infant passing through the vagina covered with primary venereal ulcers; and that there is also reason to believe, that the milk of a syphilitic nurse is sometimes the medium of infecting the nursling, whether the breast be the seat of any local disease or not.

It is only in some rare instances, Dr. Durkee tells us at the beginning of the chapter, that the syphilitic taint never shows itself in the offspring of venereal parents. On the next page, he says that it is extremely rare for the child to be tainted with constitutional syphilis, when the father is free from constitutional symptoms at the time of the impregnation of the ovum. Further on we read, that the blight of the ovum and abortion are often produced by the presence of the syphilitic virus derived from the vitiated spermatozoa of the father, who, as well as the mother, may be in good health at the time of conception. It is not very clear what Dr. Durkee's opinion is as to the frequency with which syphilitic affections are transmitted to the offspring; one thing, however, we may be positive about, which is, that, with the great majority of modern surgeons, he believes that hereditary transmission does occur. This has been, indeed, the general belief at all times; for, until the time of Hunter, who taught that as a secondary or constitutional affection, syphilis could not be transmitted to the fœtus in utero, we do not know that such transmission was seriously questioned.

Little is to be gleaned in regard to this important subject—about which so much has been written of late years—from Dr. Durkee's statements in this chapter. We are told therein that sooner or later after birth, generally before the second month, certain diseases of the skin—among which pem-

phigus, by far the most common of all, is not mentioned—and certain affections of the mucous membranes of the nose and mouth manifest themselves. Not a word is said of the well-known changes in the liver, of the peculiar abscesses of the thymus gland, or of the abscesses found in the lungs of children who are dead-born, or die soon after birth from, we will not say infantile syphilis as Dr. Durkee does, but from congenital syphilis, from syphilis contracted during intra-uterine existence from the formative or nutritive elements received from the parents; nor are the morbid changes, undergone by the maternal placenta in cases of this kind, described, indeed they are not even alluded to.

It has been our aim, in what we have written, to present a fair and unbiassed view of the contents of the volume before us. In doing so, we have freely criticized the author's views where we conceive them to be erroneous, and have candidly commended such parts of the work as seemed to us to be worthy of praise.

It only remains for us to notice the style in which the work is written, and which appears to us to be too ambitious, and unsuited to a scientific work. Thus he says the patient with chronic epididymitis "is unfit for much physical activity by day, and the sleep of the labouring man is not his." To the same individual, "free libations of sarsaparilla-decoction" are advised as useful. A married man, Dr. Durkee knew, "had a tall, slender, gaunt frame, was well fenced in with bones, but was far from being robust." In listening to the tales of patients, with spermatorrhœa, "it often requires the ingenuity of the most expert tactician, to winnow the truth from error." Blood is often called rich, but it is unusual to hear it spoken of as "opulent." As an instance of the peculiar orthography adopted by the author, we will quote the following: "By demolishing a chancre at an early period, you lay the *ax* to the foot of the tree." W. F. A.

BIBLIOGRAPHICAL NOTICES.

Art. XV.—*Transactions of State Medical Societies.*

1. *Transactions of the Medical Society of the State of Pennsylvania, at its Annual Session held in Lancaster, May,* 1858. 8vo. pp. 127.
2. *Transactions of the Third Session of the Medical Society of the State of California, convened at San Francisco, February,* 1858. 8vo. pp. 168.
3. *Transactions of the Medical Society of the State of New York for the year* 1859. 8vo. pp. 454.

1. The Transactions of the State Medical Society of Pennsylvania at its annual session of 1858, comprise, independently of the address of the President, only nine reports from county societies. Even these few reports are in the main meagre and unsatisfactory. There must certainly exist a culpable degree of apathy on the part of the great body of the profession throughout the State in respect to the medical organizations which exist in their midst, or an entire ignorance and disregard of the important advantages which these organizations are adapted to confer upon all those who heartily enter into and co-operate with them.

The address delivered at the opening of the session by the President of the Society, Dr. John L. Atlee, of Lancaster, was able and judicious. Somewhat desultory, perhaps, but, nevertheless, replete with important remarks in reference to subjects which imperatively claim the serious attention of the profession in this as in every other State. Dr. Atlee endeavours to enforce upon the notice of our physicians the fact that complete and thorough organization upon a liberal and practicable basis, and a strict conformity to the code of ethics in all its requirements, are two of the things which are essential to elevate the medical profession to its true position, and to secure to each of its members the free enjoyment of his rights—enabling the profession the more effectually to accomplish its beneficent mission in the prevention as well as in the cure of disease—in the protection of the community from all injurious agencies, and in the prolongation of the health and vigour—the usefulness and enjoyment of the human organism to the latest possible period.

The first of the professional reports in the present volume of *Transactions* is from the Beaver County Medical Society. It commences with a neat and very concise sketch of the topography of the county, and of the principal endemic and epidemic diseases which prevailed within its limits during the year 1857. The leading fault of this report is want of fulness and sufficient elaboration. Some of the cases of disease embraced in it are, however, sufficiently interesting.

In the early part of the spring of 1857, an epidemic of scarlet fever commenced in the town of Rochester, at the mouth of the Beaver River. It gradually extended up and down the Ohio, over an area of country about three miles long by half a mile broad. Within these limits it prevailed to a greater or less extent all the spring and summer; lingering on until the first of September, when it slowly ceased. Sporadic cases, however, were met with until the middle of October.

"The epidemic," it is stated, "was only remarkable for its mildness, the great majority of cases requiring little or no medical interference. Where proper care was exercised, but few deaths occurred, and many cases passed through the disease and made good recoveries without our services being required. The extreme mildness of the disease in many cases, and the speedy recovery of health, lulled parents into security, and thus gave origin to an unusual number of cases of nephritic disorder, which we sometimes found difficult to manage, and in a few

instances, a fatal termination ensued. So frequent and troublesome was this sequela that some of our physicians adopted the course of keeping up a mild purgative and diuretic action for a week or two after the apparent restoration to health. In the treatment of the febrile symptoms the salts of potassa were almost universally employed, and always, seemingly, with good effect. Some employed the acetate, some the hydriodate, but the general favourite was the chlorate. Due attention was of course given to the throat, nostrils, and bowels, but the basis of treatment, in all the cases reported to the society, was potassa in some of its combinations. Where the strength would permit its use, digitalis appeared to possess almost specific power over the dropsical effusion supervening on the disorder of the kidneys; the stupor and swelling disappearing rapidly and permanently under its magical influence."

"The following extraordinary case is extracted from a report of Dr. Oliver Cunningham: "I was called to visit a man about fifty years of age, affected with strangulated hernia. The treatment was such as is usual in such cases: the taxis, bleeding, opium, warm baths, cold applications, injections, &c. The patient was an ill-natured, irritable man, and very difficult to manage. I insisted upon operating, but he positively refused to submit. But in about a week he became anxious to have an operation performed, but I then declined, believing it to be too late. Stercoraceous vomiting had set in on the second day, and still continued. At the end of ten days, I succeeded in reducing the hernia, when a quantity of pus and blood was discharged. The bowels above the stricture still not acting, I pushed calomel and opium to moderate ptyalism, employing at the same time, injections, fomentations, and cathartics. Finally, on the *twenty-sixth* day, after I had first seen the patient, I administered a large dose of croton oil, and in a short time afterwards, the stercoraceous vomiting which had continued up to this time, and refused to be allayed, ceased, and in about four hours, the bowels acted, with a discharge in quantity beyond belief. At least two gallons of fecal matter passed at the first two motions."

In the report from the Berks County Medical Society we are told that, during the spring of 1858, scarlatina and measles appeared apparently in very close alliance. Frequent cases occurred when, evidently, the rubeola commenced with its usual symptoms, and in the course of forty-eight hours the eruption changed or merged into the scarlet rash, with anginose symptoms, high fever, swelling of the parotid and submaxillary glands, irritable stomach and bowels, and generally otitis; so that instead of having simply a case of measles to treat, the physician found his patient labouring under a severe attack of scarlatina anginosa, much to his chagrin and annoyance, as well in consequence of the supposed inaccuracy of his diagnosis, as of the perplexing inquiries of anxious parents.

The chief part of this report is devoted to a biographical notice of Dr. William Gries, a distinguished physician of Berks County, and one of the most efficient and active members of its medical Society. He died at Reading, on the 12th of April, 1857, in the 61st year of his age.

In the very short and unsatisfactory report from Blair County, the fact of the joint prevalence of scarlatina and measles is noticed, as well as the repeated blending together of the two diseases. "In May," it is stated, "whilst scarlatina was disappearing, rubeola was correspondingly increasing in frequency, and also becoming less complicated with the declining disease. During June, this disease prevailed very generally, and that, too, without respect to age. It was well developed in a number of adults who said they had had it in early childhood. The epidemic had nearly disappeard by the first of July."

The report from the Carbon County Medical Society presents a mere outline sketch of the physical characteristics, and of the sanitary condition of the county during the year 1857.

In the report from the Chester County Society, it is stated that scarlatina and measles prevailed extensively during the spring of 1857, throughout the county. In a few localities the former disease was exceedingly fatal. In some cases, scarlatina preceded the appearance of measles, the epidemic appearing in the fall months of 1856, and during the spring months of 1857, being replaced by the latter disease. This order was reversed in several instances.

To this report are appended biographical notices of three of the deceased

physicians of Chester County. Dr. S. A. Ogier, a native of Charleston, S. C., who was killed by a locomotive on the Pennsylvania Railroad, November 26th, 1857, in the 36th year of his age. Dr. Richard B. Dilworth, a native of Philadelphia, who died at Wilmington, Del., November, 1851, in the 41st year of his age; and Dr. Elisha Gatchell, who was born in Chester County, and died in Philadelphia, October 5th, 1857, in the 29th year of his age.

We extract the following from the report of the Lebanon County Medical Society:—

"The most obstinate, as regards duration, and the most fatal epidemic (during 1857) was scarlatina. It has prevailed for the last two years, abating for a season, and then making its appearance with increased severity. The last case reported occurred in the month of April last (1858). The ratio of mortality, although less prevalent during the past than the previous year, was one in six and a half or seven, instead of one in eight and a half to nine. This increased mortality is attributable to the fact that the type of the disease assumed generally a more congestive form than was previously observed. The severity of the disease was such that, in many instances, death occurred in a few hours after the attack."

"In comparing the different reports in reference to the treatment of scarlatina pursued by the physicians of the districts in which it prevailed, we find a great diversity of practice. The truth is that there is no treatment which has come under our observation, which may be considered as emphatically *the* treatment. Mild cases recover with little or no medication, while in more severe or malignant forms, the best directed efforts will prove abortive.

"Measles made its appearance in the vicinity of Lebanon, in the month of January, 1857, and in the month of April it became the prevailing disease, having superseded scarlatina. In numerous instances a blending of the two maladies occurred, the two characteristic eruptions in different parts of the body being well marked, and the catarrrhal and anginose symptoms very decided. The disease subsided during the summer, but reappeared in the month of September. The reports of the physicians of Lebanon and vicinity confirm the fact, that as scarlatina began to abate measles took its place."

We find nothing of especial interest to note in the report from the Perry County Medical Society. Appended to it is a biographical notice of Dr. Benjamin F. Grosh, a native of Marietta, Pa., who died at Andersonburg, Perry County, November 9th, 1857, in the 40th year of his age.

We extract the following notice of a curious case of spasmodic closure of the œsophagus, attended with general nervous depression, and terminating fatally, from the report of the Schuylkill County Medical Society. The case is reported by Dr. McKibbin, of Ashland.

"The patient was a delicately-built man, aged 24 years; previously in excellent health. On the evening of October 23d, after partaking sparingly of supper, he found himself unable to swallow the slightest particle of any solid or liquid substance. The doctor was called in on the 27th. Found no pain, sickness of stomach, or difficulty of breathing, but great weakness, constant slavering, intense thirst, and desire for food, with sleeplessness. Voice as in cynanche tonsillaris, of which, however, inspection showed no signs. He would seize a glass of water, make a powerful effort to swallow, retain some in his mouth, and try vainly, with all his strength, to urge into his gullet a single drop. A stomach-tube passed readily, proving no stricture to exist, and whey, beef-tea, &c., were injected with some temporary advantage. Blisters to the throat, stimulating liniments to spine, injection into the stomach of brandy, nutriment, etc., proved abortive, from an apparently total lack of nerve force, and the patient died on the 29th. A *post-mortem* examination was refused. The case seemed to exhibit some of the symptoms of hydrophobia, though nothing in its history appeared as an alleged cause."

In the report from the Susquehanna County Medical Society, Dr. L. A. Smith, of New Milford, states that "bronchocele is quite a common complaint there among the female portion of the community." The cause of it he is unable to account for, unless it be from the want of iron or lime in the water which most families use.

2. The Transactions of the Third Session of the Medical Society of the State of California (February, 1858), open with the address of the retiring President, Dr. Henry Gibbons. The main subject of the address is the character and condition of the medical profession in California. Sad and gloomy is the picture delineated by Dr. Gibbons in all its aspects. Of the ethical and educational standing of the physicians who followed in the train of emigrant adventurers that from almost "every country under the sun," have flocked to the shores of "the golden sanded rivers" of the Eldorado of the West, he gives a most unflattering exhibit.

Dr. Gibbons very correctly points to the only available and efficient means for the regeneration of the medical profession of California—the only agency by which its character, professionally and morally, can be elevated to its proper standard, and harmony caused to take the place of the existing discord in its ranks. This means—this agency, is the complete organization of all the legitimate members of the profession throughout the State, into local and county societies, under the general jurisdiction and supervision of one general head, composed of delegates from each portion of the State—bringing them thus under the immediate influence of the recognized code of professional ethics—imbuing them with its spirit and that *esprit du corps* without which it is impossible to render each the trusty guardian of the interests of the whole. By such an organization, the moral character of the medical profession of California may, doubtless, be brought up to the proper standard, and its unity of action and of purpose so secured, that the best interests of each of its members, in common with that of his colleagues, and of the community at large, may be effectually promoted.

The report on the topography, meteorology, endemics, and epidemics of California, by Dr. Thomas M. Logan, is a highly creditable production—presenting a somewhat elaborate and most interesting exposition of the several subjects embraced in its title. The general facts it presents cannot fail to prove of immediate value in the investigation of the etiology and prophylaxis of the diseases incident to the inhabitants of the Sacramento and San Joaquin valleys, and as interesting for reference hereafter, when the medical topography of the entire country shall become materially modified by draining, cultivation, and the other necessary results of increased population and of those processes by which land and water, mountain and valley, forest and prairie, are rendered subservient to the wants and interests, the comforts and luxuries, of man.

A large number of the diseases which up to this period have prevailed in California, and by which the major portion, perhaps, of the deaths that have occurred among the first immigrants and sojourners, and among the early settlers, and even among the present transition population of its principal cities, as well as its mining and agricultural districts, are attributable evidently to causes altogether extrinsic to the mere influence of climate and locality, and will be known hereafter only as a matter of history.

In preparing that portion of the report which is devoted to a consideration of the diseases of California, the writer has confined himself chiefly to a consideration of epidemic visitations.

"Most of these diseases," it is remarked, "as we have seen in their history, owe their prevalence to accidental causes, and can hardly be regarded as *endemic*. Some forms, however, as intermittent fever and diarrhœa, may be regarded as endemic, but these have been found to be so much under the influence of preventable conditions, and the control of science and civilization, that we might, perhaps, with much propriety, claim for our salubrious State an exemption from endemics—certainly from those of a malignant kind. A few sporadic cases of various recognized forms of disease occasionally occur, as the tables which accompany the report attest, but soon die out for want of proper pabulum. It will, however, be observed on reference to the table of average mortality, that the diseases we have specially dwelt upon, are all included in the class zymotic, which embraces epidemic, endemic, and contagious maladies, and of which class forty-seven per cent., or nearly one-half of the total number of deaths that occurred during eight years, are found."

"In reference to the geographical distribution of diseases, we believe," says Dr. L., "that the true philosophy of the *causa morborum*, as far as California is

concerned, will be found in the combined influence of the meteorological and physiological conditions, modified by temperament, and that the varieties of disease, as cholera, diarrhœa, typhoid fever, &c., here met with, depend greatly, if not entirely, for their manifestation, on the mode of life (hygiene) of the inhabitants. The history of the diseases we have traced reveal this—their appearance and disappearance depending on the mode of life of our inhabitants, and the increase and decrease of the comforts and ameliorations of society."

In a report on practical medicine, by Dr. I. P. Whitney, a brief notice is taken of a disease which has repeatedly prevailed during the last three years in the valley of the Bay of San Francisco. Its principal subjects were children, in whom the most serious observable lesion was of the throat.

"Indeed," Dr. W. remarks, "this anginous complication is regarded as so essential a part of the disease as to have given to the entirety of the affection the name of *the sore throat*. * * * If the disease ever originated from contagion, it must be, like typhoid fever, only so propagated under circumstances which tend to concentrate the poison in the excretions of, or the atmosphere surrounding, patients suffering under it. I have never seen a case which I was satisfied was derived from this cause. According to my observation, the closest etiological relationship of this affection is with influenza, whilst its nearest pathological neighbour is scarlatina. Like influenza, it appears to originate in some peculiar atmospheric condition; and, like scarlatina, whilst it affords evidence of the action of a blood poison, the local lesions which it exhibits are in many respects similar to those produced by the particular poison of the latter disease. In the cases of the disease which have fallen under my observation, I have seen every grade of throat affection, from the simplest blush of faucial redness, like that exhibited in the mildest cases of scarlatina simplex, through the tumefied fauces, with pseudo-membranous patches, stiff neck, and swollen cervical glands of scarlatina anginosa, to the deeply ulcerated fauces, with gangrenous patches, fetid breath, sorded teeth, and profound vital prostration characteristic of scarlatina maligna—the cynanche maligna of Cullen. And further; in two cases that I have treated of this throat affection, about the fourteenth or fifteenth day from the accession of the complaint, there occurred chills, followed by fever, headache, restlessness, pain and tenderness of the loins, and vomiting, with a puffy swelling of the face, accompanied by frequent micturition, the urine being scanty, and of a dark, smoky colour. Suspecting from the above train of symptoms the existence of a renal affection, the same as not unfrequently succeeds to scarlatina, I examined the urine by heat, nitric acid, and the microscope, and found it highly albuminous, and containing blood corpuscles, fibrinous and epithelial casts and cells, and some crystals of lithic acid."

In respect to treatment, Dr. W. merely states that he employed as his chief remedy the mineral acids. In several cases of great severity, the only medicines, general or local, employed by him, were the following: ℞.—Acid. sulphurici aromat. ℥ss; syrup. rosar. ℥iiiss. A teaspoonful of which, in a tablespoonful of water, was given every two hours; and acid. hydrochlor. ℥ss; combined with mellis rosæ ℥iss; was applied to the fauces with a mop of linen rag, three or four times a day, where the ulceration had a sloughy appearance.

Dr. J. E. Oatman contributes a paper on the malarious influence and its treatment; that is on the morbific influence exerted upon the human organism by exposure to malaria, and the proper management of the abnormal conditions thus induced. The observations of Dr. Oatman, though interesting, possess but little originality, while they want that precision and elaboration essential to adapt them to any practical purpose.

From a paper on tracheotomy, by Dr. Arthur B. Stout, we learn that the various throat diseases are particularly prevalent throughout California, especially during infancy and childhood. The writer refers all of these diseases to the remote effects of the malarious poison which in the mild climate of California is generated to a moderate extent during all seasons of the year.

The leading object of Dr. Stout in the paper referred to, is to enforce upon practitioners the importance of tracheotomy in the treatment of all the more violent forms of the anginose affections, not so much as a curative measure as a means of prolonging life, and placing the diseased parts in a condition of rest,

thus affording time for the cure of the general and local affections by which the life of the patient is menaced, and facilitating the cure of the latter by annulling the constant respiratory movements of the larynx. He would have the operation performed the moment symptoms threatening asphyxia appear, and proposes a new form of canula to overcome some of the difficulties attendant upon it. We fear, however, that the doctor places too much importance upon tracheotomy in the treatment of throat affections, and that experience will not confirm the same amount of beneficial results he anticipates from its performance.

In a short paper on diphtheritis, by Dr. J. Blake, it is stated that, contrary to the generally received opinion that the disease is peculiar to low, damp situations, the most fatal epidemic that has fallen under his observation occurred at an elevation of about 4,000 feet above the sea, though in a village situated in a hollow, being surrounded by higher hills. In another place, about 2,300 feet above the sea, a great many cases of the disease occurred; but this situation is, like the former, in a hollow surrounded by higher hills. It is chiefly, however, in the Sacramento valleys, and those of the coast range that the disease has been found most prevalent and most fatal.

At Cache Creek it was principally during the spring and summer months that the disease appeared, and according to Dr. Bynum, a physician of that locality, it became always more virulent after a north wind. This, Dr. B. remarks, would show, contrary to the general opinion, that a moist atmosphere is not one of the conditions favourable to the development of the disease, as during the spring and summer months the northerly winds are by far the driest that blow in the valley of the Sacramento.

Dr. Blake believes, in respect to the pathology of diphtheritis, and we are convinced that in such belief he is sustained by incontestable facts, that the disease is of a genuine zymotic character, and is caused by some external morbific influence which acts upon the whole system, and that, of this, the formation of the pseudo-membranous exudation upon the fauces is but one of the most apparent manifestations. He considers the disease to be one altogether distinct in its causes, in its character, and in its treatment, from tonsillitis, croup, and scarlet fever. In this, to a certain extent, he is to be considered as correct. Diphtheritis is unquestionably identical with neither of these affections. With the ordinary form of tonsillitis it has little or no affinity, while from croup and scarlatina it is distinguishable by well-marked and unmistakable characteristics; and yet, if attention be directed simply to the diphtheritic deposit in the throat, so far as this symptom is concerned, the whole of the four diseases under consideration may, with propriety, be considered as closely related, if not identical. Between the condition of the throat in the more violent cases of diphtheritis and scarlatina, no difference whatever can be detected, and when in both diseases the membraniform exudation extends downwards deeply into the larynx, all the characteristic phenomena of croup become developed. A specific difference has been attempted to be set up between the exudation of the throat in the several diseases referred to, based upon a supposed difference in its colour and consistence in each; we can admit, however, the correctness of neither the facts nor the reasoning upon which the doctrine is based.

"As regards the treatment of the disease," says Dr. Blake, "the views that have been already expressed as to its nature, would plainly indicate a tonic, stimulant course; and this I have found most successful where I have tried it myself, and have seen it tried by others. In those cases which are ushered in by well-marked febrile symptoms, a mild aperient, revulsives to the neck, and a mixture containing spiritus mindereri and chlorate of potash, is what I would have recourse to, giving also an emetic of sulphate of zinc and ipecac, and carefully avoiding tartar emetic and every depressing medicine." When the more violent febrile symptoms have moderated, he administers chlorate of potash, in doses of from three to four grains every one or two hours, combined with tincture of bark or quinine, the patient taking, at the same time, light and nourishing diet; and in more severe cases, where the depression is great, brandy and eggs. He has also found benefit, he believes, from the use of charcoal; it was given with the view of absorbing or sweetening the fetid excretions which to some extent must find their way into the stomach from the pharynx. As re-

gards the local treatment, he believes the application of the strong muriatic acid over the whole of the diseased surface, as far as it can be reached, is the best caustic. When there is a fetid discharge from the nostrils, a weaker solution, mixed with creasote, may be injected into the nostrils.

Of the success of the above plan of treatment, Dr. B. speaks in the most positive terms.

The report on the results of surgical operations in California, drawn up by Dr. E. S. Cooper, contains, among others, the history of a case in which a severe wound was received in the abdomen, eighteen inches in length, implicating the great omentum, descending colon, small intestines, and mesentery, and dividing eight or nine branches of the superior mesenteric artery; complete recovery taking place at the end of eight weeks. The histories, also, of two cases of wounds of the neck, with division of the internal jugular vein and primitive carotid; ligation of the artery being performed in both cases. Recovery took place in both. The history, also, of a case in which was removed by operation an osteo-sarcomatous mass of diseased structure embracing the left clavicle, sternum, sterno-cleido, mastoid and scalenus anticus muscles, with adhesion to the vena innominata, first intercostal muscle, etc. The patient entirely recovered. The history, also, of a case in which a fibro-cartilaginous tumour was removed from the uterus by ligature, with a favourable result.

A report on obstetrics and diseases of women, by Dr. R. Beverly Cole, presents a most painful picture of the moral and physical condition of the female portion of the population of California. Diseases of the sexual organs of every form and grade, the result of the particular circumstances in which they are placed, but more particularly of their dissipated lives, are, we are assured, of common prevalence. We find, however, in the strictly professional portion of the report, but little that demands especial notice.

The remaining papers embraced in the volume of transactions under consideration are equally creditable to their authors with those we have thus passed in rapid review. We feel persuaded, from the general character and tone of the reports presented at the third session of the California State Society, that the profession there includes within its ranks a number of physicians endowed with talents, zeal and industry fully adequate to its speedy elevation to the highest standard, and to enlist it effectually in the successful cultivation of the wide and fresh field for medical investigation amid which it is placed, and through its labours to enlarge materially the boundaries of medicine both as a science and an art.

3. The Transactions of the New York State Medical Society at its session of 1858, embrace a series of reports and communications which are in general ably drawn up and replete with materials of the most instructive and valuable character. They are equally creditable to their authors and to the society at whose instance they were prepared and published.

The theme of the address delivered by the President, Dr. Thomas C. Brinsmade, is "medical associations." The subject is thoroughly and ably discussed in all its aspects. The importance of the systematic association of physicians cannot be too often and too earnestly pressed upon the attention of the profession—no one of its members can claim so elevated a rank as not to need under any circumstances its aid, no one can be so insignificant as not to be materially benefited by its influence. The power of such association as a means for the enlargement, improvement, and diffusion of medical knowledge, and for securing the efficient and harmonious co-operation of each of its members for the furtherance of the true interests of the profession, is very correctly depicted, and enforced by arguments that cannot fail to carry conviction to the minds of all who will carefully consider them.

The first of the strictly professional reports is one on prognosis in cases of fracture of the neck of the femur within the capsule, having especial reference to the question of ossific union, with a few remarks, in addition, on the subject of treatment, by Dr. Frank H. Hamilton, of Buffalo. After referring to the opinions advanced by the leading surgical authorities of modern times on the question of ossific union in cases of complete fracture of the neck of the femur

within the capsule, and examining, somewhat in detail, the evidence supposed to be furnished of the occurrence of such union by the specimens preserved in various pathological cabinets, Dr. H concludes—that, notwithstanding some of the cases of supposed ossific union of the thigh bone with the capsular ligament must be rejected as of doubtful character, yet sufficient evidence remains to warrant the belief that, under certain circumstances, complete consolidation may occur in this fracture. The favourable conditions referred to have relation to the age and health of the patient, the degree of separation of the fragments, the laceration of the periosteum and capsule, the treatment, etc. "Such a combination of circumstances" Dr. H. believes to be "probably exceedingly rare; and what is more unfortunate, if they exist, the fracture is not likely to be recognized, and the surgeon will fail to avail himself of those advantageous coincidences, which might, if understood and properly treated, secure a bony union."

According to Dr. H., the chief difficulties in the way of a bony union in cases of fracture within the capsule are—

"The persons to whom the accident occurs are generally advanced in life, and consequently the processes of repair are feeble and slow.

"The head of the bone receives its supply of blood chiefly through the neck and reflected capsule, and when both are severed, the small amount furnished by the round ligament is found to be insufficient.

"When the fragments are once displaced, it is difficult, as I have already explained, if not impossible, to replace them.

"The direction of the fracture is generally such that the ends of the fragments do not properly support and sustain each other when they are in opposition.

"The fracture is at a point where the most powerful muscles in the body, acting with great advantage, tend to displace the broken ends.

"Aged persons, who are chiefly the subjects of this accident, do not bear well the requisite confinement, and especially as the union requires generally a longer time than the union of any other fracture; so that a persistence in the attempt to confine the patient the requisite time often causes death.

"Whether the absence of provisional callus, as a bond of union, and the interposition of synovial fluid between the ends of the fragments, constitute additional obstacles, I am not fully prepared to say. In the opinion of many surgeons these circumstances constitute very serious, if not the chief obstacles."

In respect to treatment, when there is complete fracture within the capsule, without laceration of the reflected capsule or displacement of the fragments, and also in the case of a fracture at the same part with impaction, our efforts, according to Dr. H., should be directed to the retention of the bone in place by suitable mechanical means for a length of time sufficient to insure bony union, or for as long a time as the condition of the patient will warrant.

"The means best adapted to fulfil this important indication are, in Dr. H.'s judgment, complete rest in the horizontal posture, the limbs being secured in straight splits constructed somewhat after the principle of Gibson's improvement of Hagedorn's apparatus."

"In treating this fracture, no extension beyond that which is necessary to insure perfect quiet can be proper, inasmuch as the fragments are not overlapped, and they need only a moderate assistance to enable them to maintain their position against the action of the muscles. Moreover, if the fragments are impacted, violent distension would disengage them and render their displacement and non-union inevitable."

Dr. H. is prepared to affirm, from his own experience, that the straight position, maintained by a suitable apparatus, will be better and longer borne than the flexed position, whether the patient be laid upon his back or side; nevertheless, the confinement to which it subjects the patient can scarcely be endured for many days, and the same is true of all other modes of treating the fracture in question.

A strong reason is adduced by Dr. H. for preferring the plan of treatment described by him, and that is, that if an error in diagnosis should be made, and the case turn out to be one of fracture without the capsule, no injury would

occur to the patient, as the treatment would be equally appropriate as in a case of fracture within the capsule. Should this plan of treatment from any cause be found inconvenient or inapplicable, nothing Dr. H. has seen will prove so available and comfortable, he thinks, as the fracture bed invented by Dr. Daniels, of New York.

The next paper is on the treatment of fracture of the femur by simple extension without splints or lateral support of any kind, by Dr. John Swinburne, of Albany. The plan of Dr. S. is to place the patient in bed, apply a broad, well padded perineal belt, as in all cases in which such belt is indicated, excepting that instead of being fastened to a splint, it is to be secured to the head of the bedstead. The pelvis being thus fixed by the perineal band, extension is to be made by means of adhesive strips so secured to the leg as to form a strong loop under the sole of the foot, through which loop a stout cord is to be passed and fastened to the foot of the bedstead.

The advantages claimed for this plan of treatment are, greater freedom of motion on the part of the patient without endangering displacement, the leaving the place of fracture open for examination, and enabling the surgeon to measure the limb as often as he desires, and regulating accordingly the amount of extension required; in cases of compound fracture facilitating the dressing of the wound of the soft parts, and insuring perfect cleanliness; the non-interference with the circulation in the injured limb by bandages and lateral pressure; the diminished danger from sloughing of the heel or malleolus; the prevention of any agglutination of the muscles to the bone, or to each other, and consequently obviating any stiffening of the limb from that source; and, finally, preserving the muscles of the limb in a better condition to resume their functions so soon as the fractured extremity is strong enough to bear the weight of the patient.

The value of the plan of treatment, in cases of fracture of the femur, recommended by Dr. S., is to be tested only by the result of treatment; this, so far as it has been obtained, is, we are assured, decidedly in its favour. In ten of the cases in which it was alone trusted to for the cure of the fracture, the utmost extent of shortening in any one of them was half an inch, and even this, Dr. S. believes, might have been prevented by greater care. In eight cases occurring in private practice, treated by the plan described, in only one was there any visible shortening—in none was there any distortion of the thigh, nor eversion or inversion of the foot. The average period during which extension was kept up was five weeks. In the majority of the cases union was tolerably firm at the expiration of three or four weeks, varying with the age of the patient, and the nature of the injury.

Six cases of fracture of the neck of the femoris within the capsule, in patients mostly over 60 years of age, were also treated by simple extension after the described plan, with results, we are assured, much better than could have been expected, and which it would have been vain to expect from any of the usual modes of treatment.

An interesting article follows—communicated by Dr. Alfred Mercer—on partial dislocations—consecutive and muscular affections of the shoulder-joint.

The displacement referred to is invariably in the direction of the acromion and coracoid processes: Dr. M. believes it to be the result of a loss of the normal antagonizing power of the posterior muscles of the shoulder, by which the pectoralis major is permitted to draw the head of the humerus forwards against the outer side of the coracoid process, when ultimately the head of the bone would probably descend on the outside of that process, then glide under it, and again mount upwards on the sternal side of the same process, under the clavicle, rather than ride directly over it.

The want of balance in the action of the two sets of muscles which act upon the upper end of the humerus, by which the affection of the shoulder described by Dr. M. is produced, is the result, he believes, of disease of the nervous system, of some constitutional affection, or of some local muscular disease suspending the nutrition of the posterior set of muscles or causing a degeneration of their fibres.

Simple reduction and retention of the head of the humerus in its normal position, will in the condition of things referred to be of no service, unless, at the

same time, the abnormal condition of the affected muscles can be removed. To effect this important end Dr. M. directs such constitutional treatment as shall be adapted to give vigor to the system—frictions, shampooing, electricity, and exercise, with every other means likely to increase nutrition and give tone to the affected muscles.

A curious case is related by Dr. C. E. Isaacs, of Brooklyn, of death thirty-seven hours after the removal of a bony tumour from the upper and posterior surface of the cranium.

The tumour, which measured a little over 3½ inches in its antero-posterior and lateral directions, was 1¾ inch in its vertical diameter at its highest point.

"The substance of its base was of exceedingly great density, and so extremely hard that, apparently, it would have been quite as easy to have sawed through a mass of ivory of the same dimensions; indeed, the sawed surface of the base, which was of a grayish white colour, had all the hardness, firmness of grain, and polished appearance of that substance. The external portion of the removed tumour, when divided vertically, resembled the firmer varieties of encephaloid, and consisted entirely of nuclei of cells and granular matter."

In removing the tumour a small portion of the upper surface of the dura mater, about the size of a York shilling, was exposed by the saw.

The following is the account of the appearances detected upon a post-mortem examination twenty-four hours after death:—

"On removing the skullcap, the under surface of the bone, which was opposite to or underneath the site of the removed tumour, was somewhat roughened, and presented many small projecting spiculæ. The skull in this situation was not otherwise diseased. The dura mater at this point was very much thickened. On cutting through this membrane with the scissors, and then turning it up on each side towards the median line, a tumour was discovered underneath the dura mater, and situated in the great longitudinal fissure, between the two hemispheres of the brain. It had originated or sprung from the under surface of the dura mater, on each side of the falx cerebri, which divided it into two unequal portions.

"This tumour was of a slightly yellowish colour, and of firmer consistency than the convolutions of the brain, from which it could be easily enucleated, without tearing the substance of that organ. Under the microscope, it was composed of variously shaped nucleated cells, of nuclei, granular matter, and numerous exudation corpuscles. It was undoubtedly encephaloid. There was not the slightest connection between it and the one removed by the operation.

"The great longitudinal sinus, where it coursed along and above the upper surface of the tumour, was obliterated for three inches and a half in extent. Thus, the veins on the surface of the brain necessarily returned their blood, by anastomosing branches, either into the great lateral sinuses, or into the petrosal and other sinuses at the base of the cranium. There was no evidence of congestion or inflammation, in any part of the brain, which appeared to be perfectly healthy.

"It is truly surprising that the presence of so large a tumour, together with the great obstruction of the venous circulation of this organ, should have produced such slight disturbance of function, the only symptoms having been loss of sight in one eye, impairment of vision in the other, and chronic headaches, of gradually increasing intensity. It can only be explained by the fact that the pressure of the tumour upon the brain must have been of such slowly increasing character, that this organ became gradually accustomed to, and enabled to bear, the presence of this enormous encephaloid deposit."

In explanation of the death of the patient so soon after the operation, Dr. Isaacs concludes that no such result would have occurred in a healthy man of equally vigorous constitution, from the mere sawing off of the bony tumour. He thinks that the influence of the anæsthetic that was administered, and from which the reaction was very slow and imperfect, exerted an injurious influence upon the brain with its imperfect and impaired circulation, and the presence of an enormous encephaloid tumour. The shock, and immediate effects of the operation, must also be taken into consideration in accounting for the fatal result.

Two cases of operation for congenital fissure of the soft palate are related by Dr. Seth Shove, of Westchester County. In one of the cases the operation was completely successful, in the other only partially so.

A case of dropsical distension of the lachrymal sac is described by Dr. John Ball, of Brooklyn.

In a paper by Dr. Edward H. Parker, of Poughkeepsie, the history of four cases are presented, illustrative of the superior efficacy of a modification of Baynton's treatment for varicose ulcers, introduced by Mr. G. Critchett in his lectures on surgery, published in the London *Lancet* during the year 1848, and practised for nine years with the happiest results by Dr. Parker.

The next article is "A Prize Essay" on scarlet fever, by Dr. Henry A. Carrington, of Dutchess County.

The essay presents a very neat outline of the present state of our knowledge in reference to the disease of which it treats. It can lay not the slightest claim to originality, and is certainly less full in reference to some of the points connected with the pathology and therapeutics of scarlatina than would seem desirable considering the formidable character of many of the epidemics of the disease, the frightful mortality often attendant upon them, and the discrepancy of opinion which still exists among the most authoritative physicians in reference to the treatment best adapted to conduct the disease to a favourable termination in the more violent and malignant of the forms under which it presents itself in its different visitations, or even in the same epidemic.

Dr. Alden March, of Albany, gives a synopsis of the history of three cases found upon record, of displaced heart, of a character to enable a very full and accurate examination being made of the action of the organ during life. All three cases have a striking similarity in many important particulars. In all, the observers attribute an active dilating power to the heart, and describe the action as sudden and energetic.

Dr. March describes also a fourth case which fell under his notice. The infant, who was its subject, died within two hours after birth. The heart protruded from the cavity of the thorax through an opening situated at the junction of the ensiform cartilage with the lower end of the sternum proper, and was destitute of pericardium.

The heart stood out in nearly a horizontal position from the surface of the body, with one face looking upwards and the other downwards, one ventricle and auricle being turned to the right, and the other to the left. The heart being thus suspended, apparently, across the lower margin of the membranous opening by the bloodvessels, and counterbalanced by the lungs within the thorax.

The true skin was deficient from the lower border of the cardiac opening to near the stump of the umbilical cord.

Dr. March has been furnished with brief notes of a case nearly parallel. He believes that accurate observations made upon a few such cases would shed light upon what appears to be a mooted question, the location and structure, namely, of the parts to which the pulsations have been referred by so many different individuals in the case of M. Groux, which has attracted recently considerable attention among the leading physicians of Europe and America.

A very good, though far too concise an account is given by Dr. John D. Watkins, of Sullivan County, of bilious or typhoid pneumonia, a disease, which, in certain portions of the United States, prevails often as an extensive and even fatal epidemic. It is evidently a disease of malarious origin, or perhaps, to speak more correctly, it is a form of pneumonic congestion or inflammation, complicating, in certain cases, an attack of bilious remittent fever, and in others of typhoid fever, and essentially modified, in consequence, in many of its prominent features as well as in its course.

In the sanitary report of Brookfield, Madison County, for 1857, Dr. A. L. Saunders gives an account of an epidemic of cerebro-spinal meningitis, which occurred in his neighbourhood during that year.

The attack was preceded, for from three to ten days, by lassitude, loss of appetite, restless nights, morbid susceptibility to cold, when, after exposure, over-exertion, mental excitement, etc.. the patient would be suddenly seized with severe pain of the head, neck, back, and extremities, with chills and flashes

of heat; a small, weak, and frequent pulse, slightly-furred tongue, mouth coated with tenacious mucus, dizziness, nausea, sometimes vomiting on assuming the erect position, cramps in the legs, contraction of the muscles of the back part of the neck and body, causing often complete opisthotonos, with delirium or insensibility. In some cases there was very slight febrile reaction, the patient sinking rapidly as if destroyed by the action of a virulent poison. In a few cases there was febrile reaction. Generally about the end of the first week, sometimes sooner, sometimes later, congestion of the lungs set in, and unless promptly relieved, soon terminated fatally. Convalescence was always tedious. In some cases there was an eruption as in typhus fever, which was absent in other cases of apparently equal severity.

In the cases of the disease which terminated favourably under the care of Dr. S., the treatment consisted of emetics of tartar emetic and ipecacuanha, with a little tincture of aconite, followed by calomel and rhubarb, five grains every four hours, alternated with as much of the solution of tart. emetic and ipecacuanha as the stomach would bear without nausea, with, in most instances, strong sinapisms to the entire length of the spine. In one case, cups to the spine were used at an advanced stage.

Dr. S. was unable to satisfy himself that any particular location, position in life, or condition as to filth or cleanliness, had anything to do in the production or prevention of the disease. It occurred upon the highest hills, and in the lowest valleys; among the wealthy and the poor, among the scrupulously clean and the beastly filthy. It attacked the aged, middle-aged, and young. The majority of those attended by Dr. S. were, however, adults below the middle age.

An able report on inversion of the uterus follows. It is from the pen of Dr. John V. P. Quackenbush, of Albany. The entire subject—the causes, mode, and circumstances of occurrence, etc.—is discussed by Dr. Q. The main object of the report, however, is to show that the ordinary explanation of the mode of production of the inversion is not the correct one, and that by proper manipulation the inverted uterus may be reposited in cases of long continuance.

The manner of reposition practised by Dr. Q. is as follows:—

The inverted uterus should be grasped firmly in the palm of the hand, so as to reduce its bulk by lessening the quantity of its blood. It should now be carried firmly up into the vagina, and pressed steadily. The latter will become tense, and *reinverts* the os uteri. Steady pressure should be maintained, and the uterus will continue to double upon itself; evolution takes place, the uterine tumour shortens at its *neck*, complete reinversion is effected, and no depression or dimpling of the fundus is at any time perceptible; and at no time by this method are there more than two layers of the uterus passing through the mouth. Dr. Q. states that while his own experience proves the applicability of this plan in recent cases, Tyler Smith, of London, and James P. White, of Buffalo, N. Y., have both recorded cases, one of twelve, and the other of fifteen, years' duration treated successfully by it.

Another communication on inversion of the uterus is communicated by Dr. Daniel P. Bissill, of Utica. From the facts adduced by him he draws the following general conclusions:—

"1st. Under circumstances favourable to such a result, irregular muscular contractions of the superior part of the womb may cause the fundus to fall down into the cavity of the body of the organ, and thus produce partial or complete inversion.

"2d. The sudden delivery of the body of the child by manual force, immediately after the head has passed the external parts, and before the expulsive efforts of the uterus are renewed, is unsafe, and may produce partial inversion by allowing the fundus to collapse, and follow the escape of the child from the uterus in the manner supposed in the second case reported.

"3d. Similar objections exist to the too frequent practice of hurrying the separation, &c., of the placenta before contractions are excited in the womb, by pulling at the navel string, whereby injuries to the placenta, dangerous floodings, and even inversion of the womb are sometimes produced.

"4th. In cases where the placenta is attached to the inverted uterus, the separation of it may as safely be performed before reducing the organ as it can

be afterwards, and in some cases it will be most safe and expeditious so to do, but no uniform rule of procedure will be found applicable to all cases, and each should be treated, like other diseases, on general principles."

A short note follows on the origin, history, and present condition of the Asylum for the Insane at Canandaigua, by Dr. George Cook, its superintendent.

From a paper on diphtheritis as it occurred in Albany, by Sylvester D. Willard, we learn that coextensive with its prevalence, there appeared to a very great extent among the adult population of the place, a diffusive inflammation of the throat of a mild character. There was, in the majority of cases, only a simple blush upon the fauces, while in other instances the palate, uvula, and tonsils were highly vascular. The appetite and general health were undisturbed. The only sensation experienced, was that of dryness and roughness of the affected parts. This morbid condition yielded readily to the application of the nitrate of silver or an astringent gargle, or it would in a few days disappear without any aid from remedies.

Simultaneous with the occurrence of diphtheritis there also made its appearance, principally among children and young persons, cases of acute tonsillitis, followed by suppuration. In a few cases, from the very outset, the tonsils have been of a dark mahogany colour, and the ulcers on their surface have assumed a greenish cast. In such cases mortification and death have ensued.

The cases of diphtheritis prevailed among children, mostly in those under twelve years of age. Its onset was sudden and insidious, occasionally the deposit in the throat had taken place to some extent when attention became first attracted to the case. The deposit extends rapidly over the palate, tonsils, rima glottidis, into the larynx and trachea, producing mechanical obstruction to respiration, the patient dying with all the symptoms of croup. In some cases, on first inspection, the tonsils were found swollen and covered with a pellicle of a pearly or oyster-like appearance. Such cases were almost always of rapid progress, terminating fatally in two or three days. In cases of slower progress, after several days, there would occur from the mucous membrane of the nose, fauces, and bronchi a thick, offensive, acrid secretion, as is so often met with in scarlet fever. Disease extends to the skin and cellular tissue about the throat and chest externally, the parotid glands become swollen, and before death takes place there is incipient mortification and decomposition of these parts. In some cases there is shown a strong effort for the separation and removal of the membraniform exudation from the fauces and for its discharge from the respiratory passages. Separation may often be hastened by seizing with a forceps portions of the pellicle and gradually and gently detaching it. There is always, however, a strong tendency to its reproduction, even when large patches have been separated and discharged by vomiting, expectoration, or otherwise.

In its pathology, diphtheritis, according to Dr. W., is nearly allied to scarlatina. A case of scarlatina, in all its symptoms, save the efflorescence on the skin, so closely resembles one of diphtheritis, that Dr. W. thinks it would require a very delicate diagnosis to distinguish them.

Dr. Howard Townsend, of Albany, contributes a paper on the hypophosphates—especially that of lime—as a remedy in tuberculosis, with a general conclusion adverse to its supposed efficacy.

A most interesting case of facial paralysis is related by Dr. Charles G. Bacon, of Oswego. The paralysis occurred first on the left side, and was caused probably by irritation of the facial or seventh nerve, by the eruption of the dens sapientia of the upper maxilla of the same side, and exposure to cold. The swollen gum was freely excised, mustard pediluvia were employed, active catharsis procured, and the camphorated liniment with tincture of opium applied to the mastoid region, and the angle of the jaw, and subsequently electro-magnetism to the same region was resorted to, followed by a blister to the mastoid region, the denuded surface produced by it being sprinkled twice a day for two days, with one-eighth of a grain of strychnine and then a few doses (fifteen drops) of a solution of three grains of strychnine in ℥j of alcohol were taken. At the end of some seventeen months the paralysis had entirely disappeared. For about ten months the patient enjoyed uninterrupted good health, when he was again attacked with facial palsy of the right side. The gum of this side was swollen.

A treatment somewhat similar to that pursued in the first attack was directed. At the period when the report was drawn up, about four weeks from the date of the second attack, the paralysis was lessened in extent, and the general health of the patient was good. The gum was less swollen but the tooth had not yet made its appearance.

A sensible paper follows on the influence of vegetation on animal life; it is contributed by Dr. Griffin Sweet, of Herkimer County, it contains, however, nothing of a very novel character, and no leading suggestions of a directly practical bearing.

The importance of every physician making daily a full and accurate registration of the cases of diseases treated by him, is strongly urged in a communication by Dr. William C. Rogers, of Albany County.

An interesting case of rupture of a "cul de sac" of the transverse colon, with discharge of the fecal contents of the bowel into the cavity of the abdomen, and their subsequent discharge externally, by ulceration or rupture, through the walls of the vagina, is related by Dr. Horace K. Willard, of Bern. The patient eventually recovered entirely—the opening between the cavity of the abdomen and the vagina becoming entirely closed. It would be very difficult to give to our readers a clear conception of the peculiar features and exact character of this case by an epitome of its history. To understand these fully the account as given by Dr. W. must be studied in extenso.

In the report on the diseases of Saratoga County, the author, Dr. James Lee, furnishes the description of a peculiar form of fever, of the remittent type, which prevailed in that county during the autumn of 1855, a parallel to which he has not met with in any of the recorded cases of febrile disease, or in the descriptions contained in the systematic works on the practice of medicine.

The peculiarity of this disease consisted more in the negative character of its symptoms than in the development of any new or strange phenomena. It was attended with considerable fatality. In Dr. L.'s own practice, out of thirty-five cases, he lost two, and he thinks this ratio of mortality was not less in the practice of others.

For the first few days of the attack no prominent symptoms were present. The patient complaining very little, if at all. There was generally observed great lassitude, with indisposition to physical exertion; loss of appetite; slight gastric uneasiness, with paleness and increased sensibility of surface. At first accessions of chilliness would be experienced, without being followed by any decided febrile paroxysm. Throughout the attack, there was generally entire exemption from headache or continued excitement. In the two fatal cases only was the peculiar condition referred to cerebral congestion present.

The tongue was, at first, either clean, or covered with a scanty adhesive coating, through which the enlarged papillæ appeared. For a few days, the pulse was small, compressed, and slightly accelerated.

After the expiration of five or six days, the fever would assume a more regular character—the usual periods of exacerbation occurring in the after part of the day, continuing for several hours, and then being followed by a distinct remission, amounting in some cases almost to an intermission.

The pulse gradually increases in fulness and quickness, the temperature of the surface becomes more elevated, and the skin assumes a dusky-red appearance. The tongue is now more abundantly covered with a dark-brown coating, and its edges are abnormally red. The gastric irritability is increased and attended usually with vomiting of a bright green or bluish fluid. The bowels become loose, and are with difficulty controlled. There is considerable thirst—but cold water or other cold drinks were found to act upon the bowels like an active cathartic. There was, also, an entire loss of appetite with, generally, loathing of food.

These symptoms continued for several days. Usually about the fourteenth day from the accession of fever, a tendency to crisis would occur, but seldom followed by complete solution of the fever. In some cases it would be succeeded by alarming evidences of general prostration, with profuse hemorrhage from the bowels. More generally, however, the tongue would become dry and dark coloured, the pulse frequent, soft, irregular, and often intermittent. Involuntary

evacuations from the bowels would occur, of a dark-coloured fluid, sometimes tinged with bile, but more often with the colouring matter of the blood. The heat of the surface, especially of the extremities, would become now much diminished, and the patient would lie in a listless, apathetic condition, but entirely conscious.

After a few days, by a rigid course of tonics and stimulants, combined with the most concentrated form of animal nutriment, reaction would begin to be established, and the morbid discharges from the bowels arrested. The normal secretion of the mouth would, in a measure, be restored, the pulse become more full. and the temperature of the surface augmented. As convalescence approached profuse sweating would often occur—the coating of the tongue would separate, quite suddenly, in large flakes, leaving the surface beneath, smooth, without papillæ, as though varnished. Subsequently the tongue and the entire mucous membrane of the mouth would sometimes become thickly covered with a substance resembling the curd of milk—which would become detached, and again reappear more than once. Its presence was always attended with disgust for food, and a protracted and difficult convalescence. In some cases, in the aged, the tongue was gashed or furrowed, and in others the entire mucous surface of the mouth and fauces would be studded with patches of aphthous ulceration.

Tenderness of the epigastrium was often present, but decided tympanites never. Convalescence was usually slow, and often attended with the formation of abscesses in various parts of the body, which were generally ill-conditioned, and gave discharge to large quantities of a sanguineous purulent fluid. Relapses occasionally occurred, recovery from which was very slow.

As the cold weather advanced, the disease seemed to blend itself with the ordinary affections of the season, and its influence on all the types of disease prevalent in the county still continues to be felt.

In regard to treatment, Dr. L. usually commenced with the blue pill, and continued its use, in moderate doses, until it showed its influence upon the hepatic secretion. When it affected the bowels too much it was combined with opium or morphia. Sometimes calomel with opium was found to answer better than the blue pill. To allay irritability of stomach counter-irritants to the epigastrium were sometimes resorted to. The effervescing draught with the addition of twenty drops of tincture of opium was, however, mainly relied on. When prostration ensued the entire dependence was on the use of sulphate of quinia, in conjunction with brandy, essence of beef—given with great promptness and regularity. Pills of opium and tannin, or of one-sixth of a grain each of sulphate of morphia and nitrate of silver were valuable remedies to arrest the inordinate action of the bowels. In the cases of hemorrhage from the bowels, the best remedy was found to be the spirits of turpentine. When there was much tenderness of the epigastrium a blister to that region was found to act beneficially.

Many other remedies, we are told, were, as a matter of course, required to fill up this outline of treatment, an account of which it was found unnecessary to enter upon.

A short notice of the mortality of Brooklyn is communicated by Dr. Charles S. Goodrich, and a report presented from the Committee on Vaccination, accompanied with the recommendation to solicit from the legislature of New York, a law "which shall authorize and empower the trustees of each of the several school districts in the State, to exclude from the benefits of public instruction all who have not been vaccinated;" it being left to the trustees so to exclude or not the unvaccinated, according as public opinion in each locality may dictate. A law from which we should anticipate not a particle of good to result.

The remainder of the volume, with the exception of the portion devoted to the minutes of the session of 1858, is taken up with an abstract of the transactions of the first twenty-five sessions of the Society, held previously to the year 1832. Interesting as much of the matter embraced in this abstract confessedly is, it would extend our already too protracted notice of the New York Society's transactions to a still more unreasonable length. D. F. C.

ART. XVI.—*Reports of American Institutions for the Insane.*

1. *Of the New Hampshire Asylum, for the fiscal year* 1858–9.
2. *Of the McLean Asylum, for the year* 1858.
3. *Of the Butler Hospital, for the year* 1858.
4. *Of the Retreat at Hartford, for the fiscal year* 1858–9.
5. *Of the New York City Asylum, for the year* 1858.
6. *Of the Pennsylvania Hospital for the Insane, for the year* 1858.
7. *Of the Friends' Asylum, for the fiscal year* 1858–9.
8. *Of the State Hospital, of Pennsylvania, for the year* 1858.
9. *Of the Western Pennsylvania Hospital, for the year* 1858.

1. THE last Annual Report of the Superintendent of the *New Hampshire Asylum for the Insane*, contains the following statistics for the fiscal year terminating with the 31st of May, 1859:—

	Men.	Women.	Total.
Patients at the beginning of the year . . .	88	81	169
Admitted in course of the year	55	43	98
Whole number " "	143	124	267
Discharged, including deaths	49	36	85
Remaining at the end of the year . . .	94	88	182
Of those discharged, there were cured . .			31
Died	8	6	14

Causes of death.—Apoplexy, 2; exhaustion of chronic mania, 3; maniacal exhaustion (acute), 3; organic disease of brain, 3; chorea, 1; tubercular consumption, 1. "The remaining one was brought to us in the last stage of a complicated disease, and died on the fourth day."

One of those who died was eighty years old, and two between 60 and 70 years. Of the patients who were discharged unrestored to their normal mental condition, seven had been inmates of the asylum less than one month each, and thirteen less than two months each. In allusion to these facts, Dr. Bancroft makes the following pertinent remarks:—

"Nothing can be more hazardous to the prospect of recovery than to make a residence of so short a period the test of the value and success of hospital treatment. A very small number recover within this short time, but in far the larger, it is not reasonable to expect it; and frequent changes in the plan of treatment in this, as in other diseases, are attended only with evil. We often see the chances of recovery in hopeful cases sadly damaged by this ill-advised proceeding. To propose a *few weeks'* treatment in a case of melancholia, originating in depreciated vitality, is only to squander effort without rational hope of success." He then proceeds to condemn the practice, "not uncommon," of removing patients who have had acute mania from the asylum as soon as they have become tranquil. "These persons are often found unable to bear the excitements of society, and return with mania rekindled and vastly diminished hopes. Could wisdom and prudence guide the admission and removal of patients, the record of complete recoveries would be much enlarged, and that of chronic cases diminished.

In reference to the etiology of mental disorders, the report contains the subjoined observations, to which we can append our unqualified endorsement:—

"The real cause is often so complicated with accidental matters that its separation is no easy task; and besides, material facts are so interwoven with private relations as to render access to them highly improbable. It therefore often occurs that the causes assigned have merely an accidental relation to the case. The previous history, in connection with the symptoms, of individual cases of insanity, goes to show that the number of attacks originating in a single demonstrable cause is very small. In rare instances, reason is prostrated by a sudden and overwhelming emotion; but in far the greater number the causes are complex, and intimately woven with the life of the individual. The apparent cause is merely an exciting one, and develops a pre-existing tendency." * * * *

"Thus viewed, it is of far less practical concern what particular vagaries of

opinion may prevail, than what power of resistance to disturbing influences the members of society may possess in a sound mental training. That those plans of education which provide, by light studies and reading, more for the exercise of the emotions than the cultivation of the reasoning powers, contribute to mental unsoundness, there can be but little doubt. But without discussing the relation of educational training to mental health or disease, it may be remarked that those educators of youth who, with manly firmness, and often against popular demand, insist on giving prominence to those studies and exercises which produce a sound, vigorous, and harmonious growth of the mental powers, instead of those tending merely to quicken the sensibilities, are worthy of gratitude as conservators of mental health."

2. The report of the *McLean Asylum*, the first from the pen of its present superintendent, Dr. Tyler, presents the subjoined numerical record for the year 1858 :—

	Men.	Women.	Total.
Patients at the beginning of the year . . .	89	89	178
Admitted in the course of the year . . .	76	79	155
Whole number	165	168	333
Discharged, including deaths	78	69	147
Remaining at the end of the year . . .	87	99	186
Of those discharged, there were cured . .	34	38	72
"Unfit,"—and remained but a few days . .	5	1	6
Died	9	16	25

Causes of death.—Softening of the brain, 1; exhaustion of acute mania, 1; epilepsy, 2; *paralysie générale*, 2; typhomania, 5; chronic insanity, or "worn out by the long continuance of perverted nervous action, with or without indications of other physical disease," 14.

Although the men's department was seldom crowded in the course of the year, the number of female applicants for admission was so great that nearly as many were rejected as received.

That portion of the report which is devoted to a discussion of the effects of the recent financial revulsion, and the subsequent increased attention to religious subjects, is worthy of transfer, without abridgment to our columns. We extract its most important parts :—

"Of the general influences which have wrought most severely with the intellectual and emotional faculties of the community during the last year, two were prominent above all others; * * * I mean extraordinary commercial disturbance, and extraordinary religious interest. No one * * * escaped without more or less mental turmoil, directly or indirectly, from the former cause; and the operation of the latter was hardly less universal. The attention of the whole community was turned to religious subjects, with deep and steady earnestness. * * * * Never is the sea of common life so thoroughly moved in thought and feeling as it has been moved in the past year, without a wreck of some of its fairest freights; and the chronicles of institutions like this mark much of the damage done, and the painful process of repair, long after the storm is laid and away from the public eye. So our experience of the year has been that a large proportion of the cases of insanity which have arisen from other than physical disorders, are clearly traceable to the causes named.

"Pure intellectual action, if persistent and protracted, may, and sometimes does, produce insanity as a direct effect; but while one person is thus made insane, scores are mentally alienated by a primary excitement and disturbance of the *emotions*, and the affection of the intellect is sympathetic and subsequent.

"A glance at the operation of the two influences noticed, will not fail to show that however much they may have overtasked the thinking powers, their disturbing, and consequently detrimental property was primarily and mainly emotional. But it is very evident that the sexes were not equally exposed to both of these causes of mental perturbation. Men certainly received the severity of the financial shock, and bore its heaviest burdens; and gave themselves to the religious movement with perhaps as high an estimate of its importance, and with

as much readiness, determination and sincerity, as did the other sex; and therefore it would seem reasonable to expect that they would suffer in greater numbers from any unhappy mental effects resulting therefrom. But * * * facts prove that in so far as these influences have been recognized as producing insanity, females have been found the most numerous sufferers. And this disparity can only be accounted for on the ground that inasmuch as women are more susceptible to *emotion*, and are capable of deeper and stronger emotion than men, so are they more liable to mental disease from the agency of moral causes. But the number of persons mentally overthrown has been in no wise proportionate to the universality and intensity of the action of these disturbing causes. * * * * The severe discipline of daily business entanglements, and perplexities, and disappointments, safely endured, and the gentle power of true religion, have given to many a person an increased capability of self-control, the lack of which is the very essence of insanity. Whatever in the experience of the year has, on the whole, taught men to think less anxiously for themselves, and more kindly and carefully for others—whatever has effectually abated self-conceit, and led to genuine benevolence of thought and deed, has lessened their liability to mental alienation."

In the treatment of insanity, the Dr. remarks that "sulphuric ether is daily proving itself a valuable agent. * * * * The object of etherization with us, * * * * is the tranquillization of the nervous system—the producing of sleep, or, if not sleep, repose; and therefore, in the various forms of mania, melancholia, and hypochondria, of which persistent and protracted vigilance is both an attendant and feeder, * * * * and where, as is often the case, all ordinary medication has proved utterly unavailing, ether is found to be invaluable and effectual, causing more than a mere temporary effect of quiet and sleep, by a general soothing and curative influence on the system."

Total of patients in the asylum, 1818 to 1858	4,451
Discharged cured	2,069
Died	518

3. The principal items of the medical record of the *Butler Hospital for the Insane*, for the year 1858, are as follows:—

	Men.	Women.	Total.
Patients at the beginning of the year	67	73	140
Admitted in the course of the year	29	18	47
Whole number	96	91	187
Discharged, including deaths	29	23	52
Remaining at the end of the year	67	68	135
Of those discharged, there were cured			22
Died			12

"The deaths include but one case of recent illness. In all the other cases, with one exception, the disease had existed many years."

Whole number of patients, 1848 to 1858, inclusive	861
Discharged cured	282
Died	170

The comparatively small number of admissions in the course of the year is attributed to the lack of accommodations rather than to a paucity of applicants. But few men have been rejected, although not one-third of the women for whom admittance was sought could be received. The hospital is becoming surcharged with incurable cases.

The proper mission of the medical profession is not merely the curing of disease; connected with that object rise the no less important ones of tracing human maladies to their origin, investigating their causes, and suggesting prophylactic measures. It has long since been demonstrated that but very little dependence can be placed upon the opinions of the friends of insane persons in respect to the causes of the mental disorder of the latter. No physician can for any considerable period be connected with an institution for the insane, without conviction of the fact by his own observation and reflection. Hence

the superintendents of our hospitals have, in latter years more than formerly, turned their attention to the more remote influences in the etiology of mental alienation. As this course has been pursued, stronger and still stronger has become the conviction that, in a very large proportion of psychical maladies, the attributed causes are merely accidental or incidental circumstances or events of life, which either have no connection, as productive agents, with the disorder, or, at most, are the last of a long train of generating influences, the first of which was in active operation during the earlier periods of the patient's existence. In the report before us, Dr. Ray discusses, somewhat elaborately, first the question whether mental disorders are increasing, and, secondly, the influence of education in the production of them. After stating the results of the censuses of the insane in several countries at different periods, in all of which the last census showed a much greater proportion of insane, as compared with the whole population, than did the first, he proceeds as follows :—

"These results may only indicate the greater accuracy which repeated investigations generally produce; but if they do not show an appalling increase of the disease, they do show an amount of it which, a few years since, before its dimensions were so carefully measured, would have been regarded as almost incredible. When we consider, in this connection, the well-authenticated fact, that the prevalence of insanity is proportioned somewhat to the degree of cultivation and refinement which the people have reached, the conclusion seems to be inevitable that much of it originates in the incidents and conditions peculiar to the civilized state. The laws of physiology might have led us to expect this result. The judicious use of an organ, we know very well, increases its power and confirms its health; but excessive exercise—that which requires an undue share of the vital energies—leads to an unhealthy condition. Every advance in civilization implies additional cerebral effort. The proportion of those who use their brains for anything beyond the ordinary functions of life, is increased by it; and with this fact is necessarily found another, viz., that the proportion of those who, in one way or another, use their brains immoderately or injudiciously, is also increased. * * * *

"We are not to forget also, that, under the appliances of civilization, the normal hardihood and elasticity of the brain are rather diminished than increased, so that it often fails, less in consequence of its efforts than of its feeble power of endurance. This kind of enfeeblement it shares in common with the other organs; and it would be as idle to deny the fact as it would to deny that gout, consumption, and enlargement of the heart, are indicative of that vital deterioration produced by the luxuries and trials of civilized life. It certainly will not be denied that the standard of health has been somewhat lowered among us during the last fifty years; and such being the case, we have no reason to suppose, other things being equal, that the brain alone has escaped the general fate. But other things are not equal. In addition to the deteriorating influences which affect all the organs alike, the brain, as we have already remarked, is subjected to a strain which has been steadily increasing with the increasing wants and excitements of life. And here we must bear in mind, what is sometimes practically forgotten in discussions of this subject, that the brain is the material instrument, not only of reason, but of the emotions, sentiments, and propensities. * * * * Hard thinking, or mere thinking of any kind, seldom of itself produces insanity. Although the most powerful intellects may, unquestionably, give way under immoderate efforts, yet there are agencies far more potent than this in disturbing the healthy balance of the mental faculties. Life is full of influences and incidents productive of strong and especially of depressing emotions. * * * *

"The indirect influences of civilization upon the mental health, are not less pernicious than those which bear directly upon the mind. The arts of luxury, the refinements of pleasure, the privations and discomforts of poverty, with its bad air, and deficient, unsuitable food; fashionable habits and practices, these are agencies which exhaust the vital energies and prepare the way for numberless disorders of body and mind. The 'ill-health' so common among our people as to become a social institution, frequently involves the brain and nervous system in the morbid process. This effect may not always appear in some form of

insanity, for it is now witnessed with frightful frequency in various cerebral affections, which blast the mental faculties and shorten existence. * * * * Indeed, were we to indicate that feature in the medical constitution of our times which distinguishes it from all others, it would be our large proportion of cerebral affections. In view of these facts, and bearing in mind, too, that every form of nervous disease is more or less propagated by hereditary transmission, it seems impossible to resist the conclusion that every advance in civilization has been accompanied by an increasing proportion of mental diseases. * * * *

"It may be fairly questioned whether the evil in question is necessary and inevitable, and whether, like other evils dependent on human frailty, it may not be removed or diminished. In a great measure, no doubt, the remedy is within ourselves, for much of the evil originates in habits and opinions that have no better support than the fashions and prejudices of the times. The difficulty is to make people regard the matter in this light—to recognize an error which ministers to their pride, vain-glory, or some other selfish sentiment. But the difficulty is not so great that we need refrain, on any suitable occasion, from bearing our testimony against the unhealthy practices of our times, whether men will hear, or whether they will forbear. * * * *

"Much of the prevalent mental infirmity may be fairly traced to the popular modes of education, which bear the characteristic marks of the spirit and temper of the times. * * * * To say that the amount of lesson and task-work imposed upon the young while at school, is always, or generally, determined by a careful consideration of the laws of physiology, and a scrupulous regard to the results of experience, would be to utter the broadest possible irony. To know what amount of work may be safely put upon the youthful brain, having reference to age, constitution, and endowment, would seem to be a matter of paramount importance, to be determined by all the light derivable from experiment and observation; but practically it is made subordinate to another and a very different question, viz., how much will satisfy the public; that public which mistakes the glitter of display for solid acquirement, and measures the skill of the teacher by the rapidity with which the pupil is pushed forward. * * * * Speed is the only test of merit. Lesson is piled upon lesson, the hours of study are increased, and the active irritable brain of tender youth is habitually forced to the utmost power of effort."

The author proceeds, at considerable length, to show that the amount of intellectual labour imposed upon pupils in the schools is too great, that the accomplishment of it requires mental application during too large a number of hours daily, and that, some of these hours often being in the evening, the brain is, thereafter, not in a suitable condition for sleep. "The mind," says he, "is swarming with verbs, and fractions and triangles, and a tedious hour or two must pass away, before it falls into a restless, scarcely refreshing slumber."

Arriving at the discussion of the effects of this course of education, he says: "The manner in which the evil is manifested is not very uniform, but however various the results, they agree in the one essential element of a disturbed or diminished nervous energy. It rarely comes immediately in the shape of insanity, for that is not a disease of childhood or early youth. It impairs the power of concentrating the faculties, and of mastering difficult problems, every attempt thereat producing confusion and distress. It banishes the hope and buoyancy natural to youth, and puts in their place anxiety, gloom, and apprehension. It diminishes the conservative power of the animal economy to such a degree, that attacks of disease, which otherwise would have passed off safely, destroy life almost before danger is anticipated. Every intelligent physician understands that, other things being equal, the chances of recovery are far less in the studious, highly intellectual child, than in one of an opposite description. Among the more obvious and immediate effects upon the nervous system, are unaccountable restlessness, disturbed and deficient sleep, loss of appetite, epilepsy, chorea, and especially a kind of irritability and exhaustion which leads the van of a host of other ills, bodily and mental, that seriously impair the efficiency and comfort of the individual.

"I have said that insanity is rarely an immediate effect of hard study at school, but I do not doubt that it lays the foundation of many a later attack. When a

person becomes insane, people look around for the cause of his affliction, and fix upon the most recent event apparently capable of producing it. *Post hoc propter hoc*, is the common philosophy on such occasions. But if the whole mental history of the patient were clearly unfolded to our view, we should often find, I apprehend, at a much earlier period, some agency far more potent in causing the evil, than the misfortune, or the passion, or the bereavement, or the disappointment, which attracts the common attention. Among these remoter agencies in the production of mental disease, I doubt if any one, except hereditary defects, is more common at the present time, than excessive application of the mind when young."

4. The report of the *Retreat for the Insane*, at Hartford, contains a synopsis of the results of the last official year, from which we select the most valuable items:—

	Men.	Women.	Total.
Patients in the Retreat, March 31st, 1858 .	102	106	208
Admitted in course of the year . . .	63	78	141
Whole number	165	184	349
Discharged, including deaths . . .	60	74	134
Remaining, March 31st, 1859 . . .	105	110	215
Of those discharged, there were cured . .	25	36	61
Died	7	3	10
Whole number of patients, 1824 to 1859, inclusive	1608	1799	3407
Discharged cured			1643
Died			347

Causes of death the past year.—Exhaustion, 4; general debility, 2; epilepsy, 3; suicide, 1. The deaths, reckoned upon the average number of patients in the house, during the year, were 4.6 per cent.

Aside from numerical tables, almost the whole of Dr. Butler's report is occupied by an exposition of the character of the Retreat as a charitable establishment—its foundation, the sources of its finances, its connection with the State, &c. &c. From the small remaining portion we make the following extract:—

"Our percentage of recoveries will be largely increased, and the proportion of incurable cases in the community will be correspondingly diminished, when common sense views of insanity shall prevail, when this shall be treated like other diseases, with a fairness, promptitude, and decision corresponding to the gravity of the disease, and the importance of the organs implicated by it. I know of no other disease which so imperatively demands that it be met, on the part of friends, with frankness and promptitude towards the sufferer, and with a reasonable confidence and patience towards those to whose skill, and care, and accumulated experience, the sufferer is intrusted. It is a reasonable claim, the justice of which should never be overlooked, that one who is willing to accept the grave responsibility of treating a case of insanity, should ever find his feelings and opinions treated with respect and deference."

5. The medical annals, for the year 1858, of the *New York City Lunatic Asylum*, furnish the subjoined numbers:—

	Men.	Women.	Total.
Patients in the Asylum, January 1st. . .	251	376	627
Admitted in course of the year	129	226	355
Whole number	380	602	982
Discharged, including deaths	111	216	327
Remaining, December 31st	269	386	655
Of those discharged, there were cured . .			164
Died	30	62	92

Causes of death.—"Consumption, 30; epilepsy, 8; *paralysie générale*, 8; congestio cerebri, 6; senectus, 6; typhomania, 5; paralysis, 5; chronic diarrhœa, 5; inflammation of the brain, 4; erysipelas, 3; diarrhœa, 3; ascites, 2; submersion, 2; pneumonia, 2; hydrops, 1; apoplexy, 1; peritonitis, 1."

Fifteen years ago, of all the dens of human wretchedness to be found in the United States, the New York City Lunatic Asylum was probably the paragon. It furnished the best practical illustration and demonstration of how not to do it, that we have ever seen, among institutions for the insane, on this side of Constantinople. Indeed, it is doubtful whether it be just to make an exception of the Timar-hané of the Turkish capital. For these reasons it is with an especial pleasure that, from year to year, we notice the improvements at the Asylum on Blackwell's Island.

"On the 9th of March," says Dr. Ranney, "all apparatus used for restraint was removed from the halls, and in no instance was anything of the kind applied until the 22d of July, when it was found necessary to use a bed-strap for two days, to keep a poor paralytic in bed. Since that time, the bed-strap or the common restraining strap may have been used on half a dozen occasions, a few hours. This lessening of restraint has certainly had a favourable influence on the patients. There have been fewer accidents than usual, and none which could be directly attributed to this omission — those occurring having been among patients who had previously exhibited no disposition calling for restraint. Extreme cases will require it, but I find these to be rare. More evils are likely to arise from a too free use of straps, even in our best regulated asylums, than from the adoption of the non-restraint system. A greater loss of clothing followed the immediate removal of the straps, but the substitution of strong quilted coverlets for blankets, and the exercise of more care in making dresses for the few who destroyed their clothing, remedied this evil."

6. In the report for 1858 of the *Pennsylvania Hospital for the Insane*, Dr. Kirkbride says: "I have again to report an almost constantly crowded state of the hospital, and a frequent inability to receive all who applied for admission. I trust that this unpleasant statement is now given for the last time. The progress already made towards the completion of the new hospital, is such as to justify the reasonable expectation that before the close of the present year it will be occupied, and that in the future no proper case need fail to obtain suitable accommodations."

	Men.	Women.	Total.
Patients in the hospital, Jan. 1st, 1858 . .	117	113	230
Admitted in course of the year	63	68	131
Whole number	180	181	361
Discharged, including deaths	65	66	131
Remaining, Dec. 31st, 1858	115	115	230
Of those discharged, there were cured . .			63
Died			18

Causes of death.—Acute mania, 2; softening of the brain, 3; tubercular consumption, 2; convulsions, 1; chronic epilepsy, 1; purpura, 2; old age, 1; dysentery, 1; chronic diarrhœa, 1; scirrhus, 1; exhaustion from long excitement, irregularity in taking food, and loss of sleep, 3. In one of these cases, the patient, a woman, was ninety-three years old at the time of her admission.

The elaborate and enlightened system of moral treatment which has for many years been pursued at this institution, is continued, vigorously as heretofore, and gradually expanding with the progress of time, and the suggestions of more enlarged experience.

"In the future," says Dr. Kirkbride, "an extended system of horticulture will take the place of farming, and, while even more desirable for our patients, it is believed will not be less remunerative to the institution." From the proximity of the hospital to one of the largest and most wealthy of American cities, it is reasonable to conclude that the proposed system would enhance its pecuniary receipts, while it would greatly conduce to the beauty of the establishment. We hope to see the day when an extensive *botanic garden* will flourish within the inclosures of this institution.

In the workshop, "most valuable labour has been done by patients during the past year, not only in assisting the carpenter, but in originating and carrying out much that was entirely novel, and very creditable to their skill, ingenuity,

and perseverance. Several specimens of this kind are now in the possession of the hospital, and a number of the illustrations for the philosophical lectures have been thus provided. It is not too much to say, that in some cases an almost entire restoration from mental disease has been effected by an individual becoming fond of mechanical pursuits, and having proper facilities afforded for this kind of occupation."

But the most prominent of all the measures constituting the scheme of moral treatment are the *Evening Entertainments*—by lectures and other means of instruction or amusement. It may safely be assumed that no other hospital in the world has a provision of this kind so extensive, so well-devised, and so perseveringly and effectually prosecuted. The report contains a synopsis of the "Thirteenth Annual Course" of these "Lectures and Evening Entertainments." The course occupied one hundred and twenty-two evenings, the subjects treated were diversified, and a large proportion of them illustrated by pictures enlarged by the compound microscope, or by other suitable apparatus. "The attendance has been large and the demeanor of those present almost invariably all that could be desired."

	Men.	Women.	Total.
Whole number of patients, 1843 to 1858, inclusive	1671	1518	3189
Discharged, cured	802	760	1562
Died	204	145	349
Single	881	606	1487
Married	721	719	1440
Widowed	69	193	262
From 20 to 30 years of age at 1st attack	608	561	1169
From 30 to 40 " " " "	437	349	786

	Cases admitted.	Cases cured.
Mania	1549	917
Melancholia	822	424
Monomania	458	194
Dementia	349	26
Delirium	11	1

From a section of the report which is devoted to the *importance of a correct public sentiment on the subject of insanity*, we make some extracts:—

"While it must be conceded that there has been a vast improvement in public sentiment in reference to the nature of insanity, and in the character of the institutions specially devoted to its treatment, it cannot be disguised that there is still abundant room for progress in both. A correct and enlightened public sentiment in regard to these, lies at the basis of all radical improvement. It is not enough that the comparatively few who are somewhat familiar with diseases of the mind, should entertain sound views in regard to them. Every advance in the general sentiment of a whole community, is of infinite service in taking from insanity some of its painful attributes, and in securing for it that kind of treatment which, in a large majority of cases, will prove the means of restoring the sufferers to health and usefulness.

"One of the first steps in the right direction, is the general conviction that insanity is a functional disease of the brain, just as dyspepsia may be a functional disease of the stomach; that every individual that has a brain may, at some period of life, and under some circumstances, often beyond his control, have functional disturbance of that brain, just as much as he that has a stomach may suffer from some of the Protean forms of derangement of that organ. This is the first great step that costs us something of our pride of intellect. * * * *It is a very common subject for remark about hospitals for the insane, how frequently visitors to these institutions, who have paid little attention to the subject, speak as though they were making their observations in reference to a form of disease entirely beyond the accidents of their lives, or a condition of humanity that by no possibility might be their own.*"

We drop, for the moment, our quotation, merely for the purpose of adding our

confirmatory testimony to the principal idea contained in the sentence which we have italicized.

"No year passes in any large community without a development of this disease in some one in whom it had never been anticipated, whose friends are sure to exclaim, on its occurrence, 'How strange! of that whole family, or of all our acquaintances, this was the very last we should have supposed would ever have been thus afflicted.' * * *

"The *nomenclature* formerly applied to insanity, and to establishments for its treatment, and unfortunately not yet entirely given up, is far behind the age, and has done more harm in influencing men's minds in reference to both, than is generally supposed. In the days when *cells* and *keepers* were spoken of, the natural inference was that they belonged to prisons, for these are prison terms. *Even now, it occasionally happens that such terms are heard from individuals who themselves occupy smaller apartments, more inconveniently located, more poorly warmed, ventilated, and lighted, and not better furnished, and yet who would be greatly surprised if asked whether they had comfortable 'cells' in the fourth or fifth story of their hotel or boarding-house.* There is no reason for thus designating the better of two chambers, that would not apply to the poorer of the two; nor should a nurse and companion of an insane person be styled a *keeper* any more than if having the care of a case of ordinary sickness. So of the institutions themselves; if they are for the treatment of disease, they should be called *hospitals*—a title which is not likely to be mistaken, and which of itself indicates why patients are sent to it. * * * The simple derivation of the word *lunatic*, or the definition of it given by one of our best medical dictionaries—'moonstruck'—shows that it has nothing to do with insanity, and ought not to be employed in connection with that disease.

"Another error— formerly very prevalent, and although now discarded by the most intelligent portion of the community, is still occasionally alluded to—is that of regarding insanity itself, or the residence of an individual in an institution for its treatment, as a reproach, or as destructive of future prosperity in life. The accident of having an attack of disease to which all are liable, and especially if without any direct agency of our own, or certainly without anything on our part that was dishonourable or criminal, can be no reproach to any one. A sensible man, when sick, will adopt such means for the restoration of his health as the experience and advice of honest and intelligent men give him reason to suppose will be most likely to effect that object; and if that end will probably be soonest and most certainly attained by entering a hospital, it would clearly be an imputation upon the sound judgment of himself and friends if he did not promptly avail himself of any advantages it might afford. * * * Those who have recovered, and have the mind to contemplate this malady in its true light * * * can hardly fail to impress every one whose good opinion is at all worth having, with the conviction that, whatever may have been the nature of their illness, their recovery has been complete, and without the slightest impairment of their mental powers, or any diminution of their capacity for usefulness in life."

7. At the *Asylum for the Relief of Persons deprived of the Use of their Reason* (Friends' Asylum), the number of patients on the 28th of February, 1858, was—

	Men.	Women.	Total.
	29	33	62
Admitted in course of the year	14	10	24
Whole number	43	43	86
Discharged, including deaths	12	12	24
Remaining Feb. 28, 1859	31	31	62
Of those discharged, there were cured	6	5	11
Died	2	1	3

Causes of death.—Exhaustion from epilepsy, 1; acute meningitis, 1; exhaustion from acute mania, 1. The last two died each three days after admission.

Whole number of patients, 1817 to 1859	714	673	1387
Discharged cured	330	296	626
Died	99	92	191

Of 602 patients admitted since 1842, 203 were between 20 and 30 years of age at the time of first attack, and 116 between 30 and 40 years.

Dr. Worthington writes as follows in regard to the participation of the emotions in the mental disorder of the insane:—

"In many recent cases of insanity, the disease is principally manifested in the emotions and moral feelings of the patient, rather than in the intellectual processes, which are frequently but little affected, notwithstanding the existence of positive delusions. This emotional disorder is generally observed for some time before decided symptoms of mania make their appearance, and by some writers is considered as constituting of itself a distinct form of insanity. However this may be, it is frequently a prominent feature in mania, the delusions of which sometimes appear to grow directly out of it. The false ideas respecting the conduct and motives of their best and nearest friends and relatives, which are so commonly manifested by the insane, and the animosity sometimes displayed by patients who have been discharged imperfectly cured, towards those who have had the care of them in public institutions, may be considered as originating in this morbid condition of the emotions and moral feelings. Where delusions are the direct consequence of this emotional disturbance, it is manifest that arguments addressed to the reason alone can have but little effect on the patient. When they are, however, addressed to the moral feelings and sensibilities of the patients, in the form of constant endeavours to benefit, to soothe, and to encourage them, the delusions will gradually vanish in proportion as the emotional disturbance diminishes."

We make two extracts from the remarks upon the treatment of the insane:—

"Moral treatment, in its widest sense, embraces everything that acts beneficially upon the disordered sensibility of those affected with insanity, and tends to restore it to a natural and healthy condition. Everything that promotes a cheerful and contented spirit, that occupies the mind agreeably, to the exclusion of morbid fancies, or that interests or amuses the patient, may be employed in the moral treatment of the insane.

"The influence of the insane on each other is believed to have a salutary tendency. A cheering word spoken by one who has himself been a sufferer and is recovering from the disease, to a newly-arrived patient, has frequently been a source of comfort and satisfaction to the latter, while the sympathetic feelings thus awakened and called into exercise, have tended no less to the benefit of the convalescent. The exercise of the social feelings among the insane has the same effect that is produced by the means employed in their moral treatment, and prevents that concentration of the mind upon the subject of their delusions, in which they are prone to indulge, and promotes a more natural and healthy condition of the emotions and sentiments. The occupations and amusements, in which they share in common, as well as their community of suffering, tend in a great degree to keep up a kind feeling amongst themselves, in the exercise of which the general comfort is greatly promoted. The amount of entertainment they are capable of affording each other in the intervals of their own distresses, is much greater than would be supposed by any one not familiar with the disease. One man at present in the institution, who is the greater part of the time impressed with the belief that he is 'almost gone,' is an excellent ventriloquist and mimic, and often amuses his companions by his ludicrous delineations of character. Another, who fancies that he has no stomach, will sometimes, by an indescribable sort of pleasantry, in which no trace of insanity is perceptible, attract the attention of all in the room, and appear entirely to forget for the time his own unhappiness, in contributing to the amusement of others. The groundless pretensions of a third to superior knowledge and attainments, have often been the subject of the harmless wit of his companions; and a timely remark directed by one patient against the irrational conduct or ideas of another, has sometimes produced an impression that has been of lasting benefit."

8. The influx of patients at the *State Lunatic Hospital of Pennsylvania* has been so great, that the trustees of that institution urge, as one measure of relief, "an increased provision for the insane in the western portion of the State." This looks favourable to the welfare of the establishment, the last report of

which will command our attention after we have paid our respects to Dr. Curwen.

	Men.	Women.	Total.
Patients in the State Hospital, Jan. 1st, 1858	130	120	250
Admitted in course of the year	97	54	151
Whole number	227	174	401
Discharged, including deaths	77	57	134
Remaining December 31, 1858	150	117	267
Of the patients discharged, there were cured	25	11	36
Died	9	5	14

Died of epilepsy, 4; inflammation of brain, 1; exhaustion of chronic mania, 5; disease of the brain, 4.

"Three evenings of each week, during six months of the year, are devoted to lectures on a great variety of interesting subjects, with illustrative experiments and drawings, and to exhibitions of the magic lantern."

Fifty-five newspapers are regularly and gratuitously sent to the hospital by their publishers.

Whole number of patients since opening	622	427	1049
Discharged restored	104	70	174
Died	94	53	147

A pretty large proportion of Dr. Curwen's report, like that of Dr. Ray, is devoted to the subject of education in its relation, as cause to effect, with insanity. The general views of the two authors are very similar, and hence the necessity of copying so extensively as we otherwise might from the report before us, is avoided.

"The great tendency of the period is to over-exertion and stimulation in every department—haste to be accounted learned, as well as haste to be rich; and the moral of the fable of the hare and the tortoise is more frequently neglected than heeded. * * * * Under ten years of age very little mental effort should be required of children; and they should be allowed a large amount of exercise, bodily health and strength being more necessary and desirable than any learning which, at that age, they may be supposed capable of acquiring. * * * * We are fully impressed with the belief that the youth of both sexes, between the ages of ten and twenty, are expected to perform duties much beyond what, in strict justice to discipline of mind and health of body, should ever be required of them.

"The good old rule of what is worth doing is worth well doing, is too much overlooked, and instead of laying deep and strong the foundations, and impressing on the mind carefully and thoroughly the fundamental principles, they are passed over hurriedly and slightly, and ever after the superstructure is found weak and defective where it should be firm and steady. In addition to this, too much is required, and too many things are embraced in the course, so that it is impossible for the individual to give that time and attention which are necessary to a correct understanding of each, and thus a superficial and desultory habit is formed, and the mind is unfitted for any steady, continued process of thought.

"But while the mind has been kept hour after hour thus engaged, now on one study, then on another, the body has been suffering the penalty of the close confinement; the limbs and the back ache, the head feels heavy and dull, and an indescribable feeling of uneasiness and restlessness comes over the whole frame. * * * * The predisposition to mental disease thus formed by over-exertion of the mind, and neglect of the bodily health, is so great that its importance deserves to be much more seriously considered and estimated by those having the direction of the studies of the young, because to them alone can the community look for such amendments in the course of studies as will remedy the evils. As a general rule, too great a diversity of studies is required, and in many cases part are a class far beyond the capacity of those who are required to learn them. Those studies which would lead to a more intimate acquaintance with the ordinary duties of life, and the constant demands of an age essentially practical, are only slightly attended to, while the higher and more abstruse

studies, which can only be acquired by matured minds after long and patient labour, are pressed upon the attention of those entirely incapacitated from understanding them."

9. The farm upon the Monongahela River, which was bought as a site for the new buildings of the *Western Pennsylvania Hospital*, has been sold, and another, more suitably adapted to an institution of the kind, has been purchased. It is on the bank of the Ohio River, about seven miles from Pittsburg. It contains about one hundred acres, with quarries of stone which may be cheaply wrought, and a spring which furnishes an abundant supply of water, at an elevation such that it may be carried to every story of the proposed hospital with no force other than its own.

	Men.	Women.	Total.
Patients in the hospital Dec. 31, 1857 . .	48	26	74
Admitted in course of the year	48	35	83
Whole number	96	61	157
Discharged, including deaths	44	23	67
Remaining, Dec. 31, 1858	52	38	90
Of those discharged, were cured	24	10	34
Died	8	4	12

Died of dysentery, 2; consumption, 1; inflammation of the bowels, 1; disease of the heart, 1; exhaustive mania, 3. Of the remaining four, the causes of fatality in three are thus stated: "One was brought to us from jail in an exhausted condition, and labouring under acute dementia, after a confinement there of several months, in a badly ventilated apartment, and without care or proper food; and notwithstanding every attention was given him, he soon sank and died. Another was admitted who had been for some time confined in jail, and while there was inhumanly beaten by criminals with whom he was associated—his jaw broken, his body covered with severe bruises, and otherwise so severely injured that he soon died. The last of this sad catalogue was brought to us from a neighbouring county poor-house, his body covered with deep and extensive burns received by falling on a stove used for warming his apartment, and so exhausted as to preclude all hope of his recovery. We allude to these facts because there are those in the community, of fair intelligence and humanity, who think that poor-houses and jails afford all the care and comforts that the insane need."

"A few cases of diarrhœa and dysentery occurred, but they were among those difficult to control in diet, or worn down by disease. With these exceptions, the health of the household has been good."

Although a new ward has been constructed, the hospital is crowded, and doubtless will remain so until the new establishment shall be ready to receive the patients. With the numerous indications of the necessity for a large hospital in the vicinity of Pittsburg, it cannot be that the Government of the wealthy State of Pennsylvania will permit that necessity to remain long unsupplied, by an omission to furnish such funds as may be requisite for the construction of the proposed buildings for the Western Pennsylvania Hospital.

Dr. Reed relates the cases which we are about to copy, as illustrations of the ability to manage, without corporeal restraints, in a hospital, patients who, in other places, have been subjected to them. We quote them not for this purpose alone—for that fact has already been demonstrated, by abundant proofs, to our readers—but as a current record of the evidence of the continued prevalence, to a certain extent, of those notions of the treatment of the insane which have come to us gray with the mists of a remote antiquity. We have often thought that if the members of the medical profession would but become interested in this subject, and use such endeavours as would be neither burthensome nor laborious, the time would soon arrive in which no such history as that which we here transfer to our columns, would come to us from any section of our broadly-extended country:—

"A respectable farmer was brought to our doors from a neighbouring county, securely tied with ropes, and in care of five strong men. This patient was at

once set free, and has been an inmate of the first male ward ever since, without restraint, and has conducted himself with the utmost decorum.

"Another, who had been chained for several months to a log, in his father's house, proved, from the hour of his admission, quiet and peaceable, and a valuable aid to the attendants in taking care of others.

"Another, who had been hand-cuffed and chained by the ankle to a stone floor, in jail, fed on insufficient food, destitute of clothing, and made a laughing-stock for criminals, after a few days' residence with us proved to be useful in painting, frescoing, and in various kinds of work, and was soon taken into the employ of the hospital.

"Another was received who had been confined in his own house, in a wooden cage or box, five by seven feet, during all of last winter, without heat and often destitute of clothing. This gloomy abode had no opening except through the heavy bars of his window, and its floor had conveniently placed on it a set of stocks, in which he was placed when excited. His food was cast to him through the window bars, and once in two weeks he was removed for the purpose of cleansing. He was brought to us hand-cuffed, and left with the usual warning that he was 'dangerous.' Six months have now passed, and we have never seen the least occasion for restraint; he has behaved with propriety, and has often been seen doing kind offices to other patients."

The moral treatment at this hospital appears to be conducted upon a scale as broad as can reasonably be expected at an infant institution, with its character just developed, struggling with many difficulties, yet confidently looking to the great public patron, the State, for that aid which shall bring it forward to a vigorous manhood, wherein the benefit may be reciprocated by the restoration of health and of reason to the afflicted citizens of the Commonwealth.

P. E.

ART. XVII.—*Transactions of the New York Academy of Medicine.* Vol. II., Part III. Containing, I. Anatomy of the Placenta. II. Physical and Chemical Changes in the Interior of the Body. By J. C. DALTON, JR., M. D., &c. New York, 1859. 8vo. pp. 42.

IN this part of the Transactions of the New York Academy of Medicine, are contained two memoirs, by Prof. Dalton, of the same high character as those hitherto contributed by himself, by Dr. Isaacs, and by one or two others, to the archives of this Society, and we must congratulate the Academy on ranking among its members such capable and active investigators as those to whom we have referred. A few memoirs like those of Dalton and Isaacs atone for a multitude of commonplace productions, such as in this prolific literary age are constantly being furnished by those whose highest ambition seems to be to theorize without observation, and attempt to enlighten in regard to those things which every educated physician is presumed to understand, and which the uneducated can more readily comprehend by a few minutes' study of a text-book. Like most other societies, the New York Academy of Medicine occasionally suffers by being called upon to father the offspring of this latter class of writers; but we must, nevertheless, bear testimony to the originality and excellence which characterize several of the published papers of this society—papers which have gained for it a position among scientific associations.

In the first of the papers before us, relating to the anatomy of the placenta, Dr. Dalton gives us the results of his own investigations, accompanied with a sufficiently full statement of the views held by previous observers. This memoir was communicated to the Academy on the 2d of June, 1858—over a year since—and the conclusions have been subsequently published in the author's treatise on physiology. It is, therefore, unnecessary for us to notice it in detail. We would only say that, by his zeal and ability, Dr. Dalton has cleared up the obscurity which previously enveloped the subject of his researches, and has, we think, by his ingenious method of procedure, demonstrated beyond a doubt the

existence of placental sinuses, and their communication with the vessels of the uterus. His labors, therefore, confirm the views of the Hunters, Reid, and Goodsir, and are in opposition to those of Lee and Robin. The injections of the Hunters and Weber were, however, open to the objection that the vessels may have been ruptured, thus allowing the filling of the placental vessels from those of the uterus. But by substituting air for the substances ordinarily used in injection, Dr. Dalton has been able to obviate any liability to this accident, and has, consequently, more positively demonstrated the point in question than his predecessors.

The second memoir "On the Rapidity and Extent of the Physical and Chemical Changes in the Interior of the Body," was read in March last, and though not possessing the originality of the first, is, nevertheless, very interesting, and the information it contains is communicated in an agreeable and forcible manner. The essay bears evidence of being the result of considerable research and reflection, and will amply repay the perusal of those who are unaware of the extent to which the zoo-chemical processes of the body are conducted, and have not the opportunity of referring to the original investigations of Vierordt, Bidder and Schmidt, Colin, and others who have identified themselves with this department of biological science. The main facts will also be found incorporated into the author's excellent treatise on physiology; but in the memoir before us they are presented in a much more connected manner than is possible in a work devoted to physiology in general, and therefore exhibit a more striking view of those great organic actions which maintain the integrity and vitality of the animal system. W. A. H.

Art. XVIII.—*Report of the Committee of the City Council of Charleston, upon the Epidemic Yellow Fever of* 1858. 8vo. pp. 69. Charleston, S. C., 1859.

The Committee appointed by the municipal council of Charleston, appear to have investigated with a good deal of care all the facts connected with the occurrence of the yellow fever in that city, during the summer of 1858, with the view to ascertain, if possible, whether the disease was traceable to an imported contagion, or originated from evident local sources of malaria within the city.

By the results of the Committee's labours it is shown, most clearly, that the first cases of yellow fever occurred, in 1858, within a district of the city, the air of which was especially unwholesome, and in a house disgusting from the amount of filth in and about it, and that these cases could not be traced to any foreign source of infection.

The first case of the fever occurred in a city policeman, who was attacked on the tenth day of July, and died on the eighteenth. This person is supposed to have contracted the disease from a relation who came to his house on the 28th of June, from on board a steamer just arrived from Havana. The steamer, however, is reported to have been in a perfectly healthy condition, and the passenger from on board of her, just referred to, it is most certain never had the yellow fever.

The steward of this same steamer arrived in the city on the seventh of July, and put up at the same house with the policeman and his relative. He is reported to have been drunk on board the steamer; was severely beaten; continued to be drunk on shore; exposed himself to the pouring rains that fell at the time; slept in his wet clothes, so saturated with water as to require that his bed and bedding should be dried and sunned. He is represented by his family and others as one crazy from repeated intemperance and debauch. In this condition he sickened on the 12th, and died on the 15th of July, from a second attack of supposed yellow fever.

The cook of the same steamer came up to the city on the evening of the 8th July, putting up at his brother's house; a different one from that above referred to, but in the same locality. He remained with his brother until the morning

of the 10th; feeling then unwell, he determined to return to the steamer; got worse that night, and on the 11th was sent to the lazaretto, and died there on the 16th of yellow fever.

This was the first case which came from on board the steamboat, that was accused of introducing the fever into Charleston. Up to this time—twelve days from the date of her arrival—she had remained perfectly healthy, and no case occurred on board of her subsequently. Nor does there appear to be the shadow of evidence to show that any case of yellow fever appeared in the house where this person put up in the city of Charleston, sufficiently early to permit us to refer it to a contagion derived from him. The first case of disease occurred in his brother, who was seized with intermittent fever August 16th, and was discharged well on the 22d. Two cases of yellow fever, one in a female and the other in a male, occurred, it is true, in the same house, but not until September 6th and 29th. The latter terminated fatally on October 5th. Thus, it will be seen that thirty-seven days intervened between the cook's visit to his brother and the date of the latter's sickening with intermittent fever, and forty-five days before the first case of yellow fever occurred in the house where he put up.

From the first to the 12th of August, yellow fever became generally diffused over the city, attacking the unacclimated foreigner and the adolescent native; and constituting an epidemic of a fearful character, long to be remembered for its mortality.

Almost contemporaneous with the occurrence of the disease in the city of Charleston, it made its appearance at Moultrieville, Sullivan's Island, and among the garrison of Fort Moultrie. Its introduction here was attributed to a passenger landed, on the 30th of August, from on board the steamer to which reference has been already made. The gentleman was in perfect health. He did not enter the city of Charleston, but went direct to Sullivan's Island. That, however, the disease in this place could not have been derived from him is very certain. That, also, it was not generated from any contagion imported from abroad on board the vessel in which that gentleman came passenger, a simple statement of facts will show conclusively.

It is to be recollected that the steamer did not arrive at quarantine until the 28th of August, and yet five cases of yellow fever had already occurred among the soldiers, the first of them sixteen, and the last of them two days before the steamer entered the harbour of Charleston. Yellow fever, we may remark, has always prevailed on Sullivan's Island when epidemic in Charleston.

The entire number of cases of yellow fever which occurred at Charleston, during the epidemic of 1858, was 1571; of these, 1126 recovered, and 445 died.

In respect to the causes to which may be attributed the occurrence of the epidemic of 1858, the Committee refer to the filthy condition of the streets—the defective scavengering—to the employing the filth and garbage collected from the highways as a material for filling up low lots, streets, etc.; the collecting of manure heaps, cow-stables, pig-pens, etc., within the city limits; the bad construction and foul condition of privy-wells and cesspools; the crowded burial grounds which exist within the very centre of the most populous parts of the city; the imperfect system of public and private sewerage, and the condition of the public drains.

In the letters contained in the report, presenting the opinions of several of the oldest medical practitioners of Charleston, in regard to the etiology and mode of propagation of the yellow fever, there will be found a very great unanimity expressed by these gentlemen in their belief as to the local origin of the disease and its non-contagious character. They nearly all point to the fact that the limits of the yellow fever locations—the infected districts—are gradually extending themselves in proportion as in the progress of public and private improvements the low portions of the city are becoming filled up by the deposition in them of garbage, sawdust chaff, and other refuse and decomposable materials; while there is exhibited an entire neglect of the important lessons in respect to civic hygiene derived from the experience of former years, and other cities.

The conclusion which the Committee deduce from the facts adduced by them, are:—

"That if yellow fever is introduced by importation, it cannot become epidemic,

except by *common* causes, that is, the atmosphere of Charleston must be in the same condition as the atmosphere of Havana, or elsewhere, from local causes, to produce or favor an epidemic; and if not in this like condition, no epidemic can possibly result from such importation.

"Charleston and other cities of the United States charge Havana with inflicting this terrible disease upon them; and Havana, on the other hand, attributes the sin of yellow fever to Siam—asserting that it never existed there until it was imported into the city from Siam. Be this true or not, it is very certain that it existed in Greece; and the very same disease that now prevails in the West Indies, Charleston, and other cities on the Atlantic coast, was described by Hippocrates nearly 300 years before the birth of Christ.

"This illustrious Greek," says Professor Potter, "observed the disease he so well describes in the mild climate of his native soil, almost in the parallel latitude in which we live. He speaks a language without disguise, susceptible of but one interpretation. The *tout ensemble* of his faithful picture portrays the disease in colours as glowing as those of Chisholm, Rush, Geddings, or Dickson. He enumerates the more prominent symptoms, under the following appellations: Καυσος (*causos*), a burning (inflammatory?) fever, attended with excessive thirst; Τυφος (*typhos*), a stupor or coma; Φρενιτις (*phrenitis*), an inflammation of the brain or its investing membranes (*acute delirium?*); Ικτερος (*Icteros*), a yellowness of the skin; and he caps the climax of the malignant picture by the words Μελανα εμετον (*Melana emeton*), black vomit; and Μελανων εμετον (*melanon emeton*), the vomiting black matter." * * "'In burning fevers,' says Hippocrates, 'yellowness of the skin, on the fifth day, especially if accompanied by a singultus, is a sign of great malignancy.' These symptoms are seen during every epidemic in Charleston." D. F. C.

Art. XIX.—*Contributions to Midwifery, and Diseases of Women and Children, with a Report on the Progress of Obstetrics, and Uterine and Infantile Pathology in* 1858. By E. Noeggerath, M. D., and A. Jacobi, M. D. New York, 1859, Bailliere Brothers. 8vo. pp. 466.

This is the first volume of what is intended to be—if we understand the editors aright—an annual register of the leading contributions to obstetrics, and to uterine and infantile pathology and therapeutics—embracing a notice of every original article or monograph published during the preceding year, which appears to present anything of importance; with a record of the titles at least, of those of less value, or which are beyond the reach of the editors.

The conception and plan of the work are excellent. If these be carried out with the same ability that is evinced in the preparation of the volume before us, it cannot fail to become a most valuable repertory of the recent facts and observations, contributed by the leading contemporary authorities of our profession, especially those of continental Europe; which will thus be rendered accessible to the physicians of this country.

It is most certain that, with the large and important additions which are constantly being made to almost every department of medical science and practice, but more especially to our knowledge of the pathology and treatment of the diseases of women and children, through the medium of either monographs of more or less pretension, transactions of medical societies, or contributions to the professional journals of our own and other countries, it is with difficulty that the student of the present day is able to make himself acquainted with the actual progress and condition of our science in general, or in reference to the particular branches in which he is the most interested. Few have the time and still fewer the means to procure and consult each new medical publication as it appears, and the various professional transactions and periodicals, both domestic and foreign, with the view of culling from them whatever they may present of new and valuable. Some one with the time, talents and facilities required for its execution, must take upon himself the task of col-

lecting, digesting, and arranging the most important of their contents; presenting them in a form that shall be readily accessible to every physician, and thus place within the reach of all the results of the current labours of the entire medical profession in the investigation of the etiology, pathology and therapeutics of disease. Such is the leading object of the publication under notice. It is divided into two parts: The first is devoted to original articles, and the second to the report on the progress of obstetrics, and of uterine and infantile pathology during the year 1858. The original papers with one or two that had already appeared in the *New York Journal of Medicine*, are all contributed by either Drs. Noeggerath or Jacobi. Whether the original department is to be kept up hereafter we know not. All we learn in reference to the continuance of the work is from the following sentence towards the close of the preface. "From 1858 we intend to keep up a review of every successive year, especially with regard to German medical literature, provided that it should meet with the approval of the profession."

The first of the original articles in the present volume, is *on the induction of premature labour* by Cohen's method. It is from the pen of Dr. Noeggerath. The paper presents the history of three cases in which premature labour was induced by him according to the method referred to, and the analysis of another reported to the Rensselaer County (N. Y.), medical society, by Dr. Blatchford; with a general summary of the reasons which in the opinion of Dr. Noeggerath recommend as preferable to all others the plan proposed by Dr. Cohen.

The first question to be decided by the practitioner in any case in which delivery at the full term of utero-gestation will involve necessarily the death of the child, while it subjects the mother to much anxiety and suffering, and jeopards, also, in many cases her life, is, the propriety of procuring a premature expulsion of the fœtus. If the decision of this important question be in the affirmative, and the circumstances and period proper for the performance of the operation are satisfactorily settled, the next question of moment that presents itself is, by what means can premature labour be brought about with the greatest certainty, and with the least risk to the safety of both mother and child? Dr. Noeggerath, as we have seen, believes that the method of Dr. Cohen is the one best adapted to fulfil these conditions. This method consists in the introduction of an ordinary sized elastic catheter, through the os tincæ, several inches into the pregnant uterus, between the wall of the latter and the fœtal membranes, and then, with a syringe adjusted to the catheter, injecting a few ounces of water, heated to 90° or 100° of Fahrenheit, at shorter or longer intervals, according to circumstances, until regular expulsive contractions of the organ are induced.

The leading features and the results of the four cases adduced in the paper before us are shown by the following table:—

Authors.	Number of injections.	Duration of labour after first injection.	Fate of children.	Fate of mothers.	Reason for operation.	Remarks.
Blatchford	1	113 hours	Alive	Recovery	Contracted pelvis	Cranial presentation.
Noeggerath	2	23 "	Alive	"	Contracted pelvis	Cranial presentation.
Noeggerath	1	19 "	Dead	"	Contracted pelvis	Cross presentation; turning.
Noeggerath	1	16 "	Died soon after birth	"	Morbus Brightii	Cross presentation; turning.

Dr. Noeggerath admits that the foregoing cases are insufficient, of themselves, to establish the true value of the method recommended by him for the induction of premature labour.

The first, we are told, who conceived the idea of exciting premature contractions of the pregnant uterus with the view to the expulsion of its contents, by the injection into it of warm water, was Scheighaüser, of Strassburg, in his

work, "*Das Gebären nach der beobachteten Natur*," published in 1825. The plan thus suggested was put in practice by Dr. H. M. Cohen, of Hamburg, who called the attention of the profession to it, in a thesis written in 1846. Since then, the medical journals furnish us with the histories of some sixty cases, of prematurely induced labour, in addition to those of Dr. Noeggerath, in which Dr. Cohen's directions were imitated, and with very favourable results.

With regard to the time that elapsed from the first injection to the termination of labour, the shortest period in these cases was three hours, the longest eight days, the average period being two days. The only instance in which the operation failed is recorded in *Scanzoni's Beiträgen zur Geburtskunde*, for 1855, by Dr. Langenheinrich, of Würzburg. In this case it does not appear, however, that a fair trial of the method was made. The catheter being introduced into the womb two inches its further progress was arrested by an unknown obstacle; the water injected was accordingly discharged instantly. Now all authors agree that a considerable portion of the water has to be retained within the womb to induce efficient labour pains. The same thing happened in the second of Dr. Noeggerath's cases, and had he not after repeated attempts found out a region where the catheter could be safely introduced some four or five inches, the operation would have entirely failed. In all the sixty-two reported cases excepting three, the mothers recovered. The deaths in the fatal cases were caused by diseases unconnected with the operation; namely, two from eclampsia and one from puerperal fever. The fate of the child is noted in fifty-eight cases—thirty-six being born alive, and twenty-two (?) dead; the number of deaths corresponding pretty accurately with the number of cross presentations.

"I am sure," remarks Dr. Noeggerath, "that every one who has once tested Dr. Cohen's method, will be struck with the gentleness and promptness of its action, and the simplicity of its execution. In most instances only one or two injections were required, and the average duration of labour from the time of the first injection was two days; not one instance is known of its failure, while the prompt recovery of the mothers, with the exception of those few cases where death resulted from eclampsia, etc., gives us the best guarantee of the harmlessness of the procedure. Moreover, the apparatus required is of such a simple character, that every practitioner, residing in the smallest village, is in possession of them. The performance of the operation requires only a sufficient knowledge of the female sexual organs in the state of gestation—the only precaution to be observed is, to inject the water not with violence and force, but gently and slowly. But we meet, from time to time, with such a disposition of the internal sexual organs, that the introduction of a catheter is absolutely impossible, whether from a firm closure of the os, or from a location of the vaginal portion in an upward or backward direction so that it is out of reach. Under such circumstances, we have to resort to a preparatory treatment in order to change the condition of the lower uterine segment, a treatment which in many cases may prove sufficient to induce efficient labour pains.

"Of all means which may be chosen for this purpose, the douche is no doubt best adapted to our purpose. In acting principally upon the lower circumference of the womb, it is apt to soften the parts, to open somewhat the os, and to bring the vaginal portion more in the direction of the pelvic axis. We will further remark that Cohen's method ought not to be resorted to when induction of labour is required in case of uterine hemorrhage, from whatever cause it may arise. In such cases, nothing can surpass the caoutchouc bladder plug (*Braun's colpeurynter*), which, introduced empty and then filled with iced water, at once controls the bleeding by the double action of cold and pressure, and is almost sure to induce efficient labour pains by its mere presence in the vagina."

The second original paper is on *the advantages and dangers of injecting caustic solutions into the cavity of the uterus*, illustrated by the history of four cases. It is also from the pen of Dr. Noeggerath.

From the circumstances and results of the cases detailed it appears that in one no reaction whatever followed upon the injection of a caustic agent, two exhibited very alarming symptoms, and one resulted in death.

The conclusions drawn from careful considerations based upon the results of these and other cases where the injection of caustic solutions into the cavity of

the uterus was practised, are that the dangers connected with such injections do not so much result from the passage of the caustic into the abdominal cavity through the Fallopian tubes, as from its direct action upon the uterus itself. In the cases where the milder caustics are applied, or where the organ has only a limited degree of susceptibility, the injection is followed by more or less severe endometritis, which generally terminates in resolution. But under opposite circumstances the inflammation may extend to the areolar and muscular tissues of the uterus, and finally to the peritoneum enveloping its body, producing the most disastrous form of metro-peritonitis. The impropriety must be evident, therefore, of resorting to a remedy that may give rise to such violent and even fatal results in those uterine affections which do not directly or immediately endanger the patient's life—such as hypertrophy, ulceration, abnormal secretion, and fungoid excrescences of the uterine mucous membrane. "From this consideration," Dr. Noeggerath remarks, "the treatment of violent hemorrhages is naturally excluded, with regard to them we must act after the principle *aux grand maux les grand remèdes.*"

Dr. Noeggerath is not for the entire exclusion of caustics in the treatment of every form of uterine disease; he would merely inculcate a greater degree of caution in respect to them than is observed by some of our recent specialists.

"There seems," he says, "to exist a certain climax in the different remedies themselves; some of them, although very effectual, are comparatively innocuous, while others are almost always followed by violent reaction. Among the former we count the tincture of iodine, and some of the organic acids, as tannin and benzoe, among the latter the solutions of silver and mercury, as well as the stronger mineral acids. The remedy which most happily combines a high degree of innocuity and of efficiency is the tincture of iodine. I have had frequent occasions to inject it into the cavity of the womb, and as yet have never remarked the least untoward symptom from its application. The use of a strong solution of nitrate of silver is almost always followed by a destruction of part or the whole of the mucous membrane, an incident, which no doubt, is at times required, and intended for effectual treatment, and is in many instances unattended with injury to the patient's health. It, indeed, seems that a solution which in one instance is very well borne, does produce the most alarming symptoms in another person. * * We should, therefore, ascertain the irritability of the womb before we attempt to apply one of the stronger caustics to its inner surface. This can be readily done by throwing a quantity of common water into the uterus, this test to be followed by a series of weaker and stronger irritating injections. A few trials of this kind will soon enable us to learn to what degree we are allowed to saturate the solution. Another advantage of these graduated injections is the fact of their diminishing the uterine irritability, thus preparing the womb for the reception of stronger solutions, in case they should be demanded."

The next paper, by the same gentleman, appeared originally in the *New York Journal of Medicine*, for November, 1858. Its subject is *the employment of pessaries*. After a few sensible but very general remarks on the use and abuse of these instruments, the particular circumstances under which their introduction is demanded, and the inadequacy of almost all of those which are in use to meet the prominent indications for the fulfilment of which it is essential they should be competent, Dr. Noeggerath describes and pictures the hysteropher of Dr. Zwank, of Hamburg, with the modifications of it by Dr. Schilling, of Munich, and Dr. Eulenburg, of Coblentz. The action of this instrument is to gently expand the lateral portions, while it sustains the superior wall of the vagina, thus preventing its inversion, and consequently the descent of the uterus. Dr. Noeggerath, although inclined to avoid as much as possible a resort to pessaries, has nevertheless had under his care a number of cases in which the employment of such an instrument was the only measure justifiable; and he believes that the hysteropher alluded to will answer all the requisite purposes of a good pessary more fully and satisfactorily than any other. It has received the sanction also of Drs. C. and A. Mayer, Chiari, Braun, Scanzoni, Breslau, and other German practitioners of note. Its advantages, according to Dr. Noeggerath, are its lightness, its touching only a comparatively small circumference of the vagina,

and scarcely any portion of the womb; thus preventing all uneasy sensations, any irritation or ulceration of the vagina, any incarceration of the uterus, or fluor albus. It can be easily introduced and removed; readily brought to its proper position, and easily cleansed by the patient herself.

The fourth article, also by Dr. Noeggerath, is "a contribution to the *pathogenesis of uterine polypi.*" It presents the details of a highly interesting case.

The history of a case of *invagination of the descending colon*, with repeated hemorrhages into the transverse colon, occurring in an infant seven months and a half old, as related by Dr. Jacobi, is a highly interesting one. To understand it correctly, in all its relations, it is requisite to study in detail the symptoms presented during life—the gradual progress to a fatal termination, and the appearances revealed upon a post-mortem examination. The accident in question is of somewhat rare occurrence, especially in young children, and when it does occur its diagnosis is particularly obscure and difficult.

The sixth article, also by Dr. Jacobi, appeared originally in the same journal as the foregoing, for September, 1858. Its subject is the efficacy of the oxysulphuret of antimony as an expectorant in inflammatory diseases of the respiratory organs occurring in infants. In the German Dispensary of the city of New York, the article has been administered, with the best effects, to a large number of patients affected with pneumonia, bronchitis, hooping-cough, etc., of a year old and under, in doses of a grain every two, or even every hour, without vomiting being produced, or only once or twice. The same is true also in reference to patients of two or three years of age, to whom the remedy was given in doses of two grains, four, six or eight times a day.

Dr. Jacobi insists upon the employment of the oxysulphuret of antimony in as large doses, within reasonable limits, as the stomach will tolerate, in order to obtain from it any decidedly beneficial results. The production of vomiting by the first doses taken is by no means an objectionable occurrence—it is to be considered rather favourable than unfavourable. "It has been used, and is used by us," remarks Dr. J., "in inflammations of the larynx, trachea, bronchi, bronchia, and lungs. After the inflammatory fever is removed, and the disease has reached its highest development, it ought to be given alone, or in combination with other agents, in full doses. Not before this stage of the disease can the effects of the remedy be obtained. We have been fortunate enough, generally, to see a speedy recovery follow its administration. We need not add, that it renders the best services in common bronchial catarrh, where full and speedy expectoration is wanted."

The last of the original articles is an elaborate and very able paper by Dr. Jacobi, on *the etiology and prognostic importance of premature closure of the fontanels and sutures of the infantile cranium.*

When we consider the extreme precaution which is observed in the construction and arrangement of the cranial vault, during the early stages of life, in order to secure its gradual ossification and consolidation, so that it may yield and expand with sufficient ease and regularity to permit of the proper and full and regular development of the brain, we would be led, *a priori*, to infer that injurious effects must necessarily result when there takes place a premature arrest of growth of the infant skull, by the too early closure of its fontanels, and the obliteration of its sutures, and we find that such is proved to be the case by the result of numerous cautious observations made by different physicians, in different parts of the world.

As a general rule, liable to few exceptions, it will be found that, in robust, well developed children the large anterior fontanel is closed and the ossification of the skull perfected soon after the age of twelve months, or thereabouts: any considerable deviation from this, especially a much earlier consolidation of the cranium, is always to be viewed as a circumstance of serious import.

After the ossification of the cranial sutures is completed, it will in general, perhaps nearly always, be found that the growth of the flat bones of the skull ceases, and the brain can no longer increase in volume except by forcing asunder the sutures, or by causing absorption of the inner table of the cranium. Not only does the size of the skull depend upon the advancement and seat of

ossification of the sutures—the earlier or later, the partial or total obliteration of certain or all of them—but its symmetrical development, also.

The premature closure of the fontanels and sutures takes place sometimes previously to birth, causing the early death of the infant after delivery, or should it survive, entailing upon it defective mental development, or complete idiocy, with a marked predisposition to convulsive attacks of a more or less severe and dangerous character. In other cases, however, it is during the first few months of extra-uterine life that the entire consolidation of the skull occurs. It is a well established fact, that the perfection of the cerebral functions depends upon the full and equal development of every portion of the brain, and as this must necessarily be prevented by whatever arrests, like the premature closure of the sutures and fontanels, the due and symmetrical growth of the skull, we can easily understand the mischief that must result whenever such premature closure takes place. Thus, we find that, in all cases where there exists any considerable diminution of size and defect of symmetry of the skull, which are almost invariably connected with a too early consolidation of the cranial vault, we are very certain to find an impaired or morbid condition not only of the intellectual faculties, but of the functions, also, of the organs of the special senses, of locomotion and of sensibility. Under the condition referred to, we know that convulsions, deafness, dumbness, mental hebetude, and failure of the sexual instinct are very frequently observed. In other cases, again, abnormal irritability, depraved sensations, epileptic or tetanic seizures, weakness and irregular movements of the muscles of the limbs, are among the prominent morbid phenomena. It is an unquestionable fact, also, that hypertrophy of the brain is occasionally conjoined with the too early obliteration of the fontanels and sutures; in such a case, as we should suppose, the results of impeded cerebral development and of cerebral compression are more promptly and strikingly developed.

While there will always be detected, in cases of too early a consolidation of the cranial vault, some degree of imperfection or other abnormality of the cerebral functions—if no actual disease occur—and while in all such cases the prognosis is highly unfavourable, still it is true that instances do occur, in which, notwithstanding the premature consolidation and consequent arrest of growth of the skull, the infant will nevertheless survive and grow up with, it may be, a feeble and unharmonious development of the mental faculties, and, perhaps, of the special senses, also, but in all other respects will remain apparently in perfect health, until from some accidental cause, an irritation or congestion of the brain or its membranes is induced, by which, sooner or later, the child is destroyed.

"In cases of a slight commencement of cranial ossification," remarks Dr. J., "where the single bones of the cranium are not too firmly attached to each other, febrile attacks may be less injurious, although every one of these, while bringing about congestion, will bring new materials to the completion of the unfortunate osseous hyper-development. Wherever the ossification of the sutures and fontanels is in an advanced stage of development, one single attack of fever, or of any inflammatory disease, even for a day, may produce congestion of the brain and its membranes, in a sufficient degree to cause death by hyperæmia and pressure."

"We desire to remind our readers," Dr. J. observes, in the conclusion of the article, "of the former conclusion, that children whose fontanels and sutures are prematurely ossified, and who manifest symptoms of cerebral irritation or depression, are destined to an early death; and further, from the arguments superadded, we would deduce the following inference—that in all cases of children, whose cranial junctures are prematurely ossified, any acute or febrile disease invading the system, slight though the acute affection may be, offers a most unfavourable prognosis. At all events, we feel justified in drawing the conclusion, that henceforth many cases of infantile diseases which terminate unexpectedly and unfavourably, will be at least explicable to the medical mind, and further, that, to give more exactness to diagnosis, and more certainty to prognosis, the condition of the cranial fontanels and junctures in general will be deemed worthy of the closest attention and examination."

The whole subject, the bare outlines of which we have thus briefly sketched,

is very fully considered by Dr. Jacobi, and its entire literature appealed to, in nearly all its bearings, for facts and observations to sustain the general conclusions at which he has arrived. The article is replete with valuable suggestions, and will yield an amount of gratification and instruction that will amply repay all who may be prompted to study it with care.

The remaining portion of the volume is occupied with the reports on obstetrics and uterine pathology, and infantile pathology, for the year 1858. The first of these reports is divided into twelve sections, which treat respectively of the manuals and reports published during the year named; the anatomy and physiology of the uterus and ovaries; the physiology and pathology of pregnancy, labour, and the puerperal state; the pathology of the ovaries; the pathology and therapeutics of uterine disease, embracing general diagnosis, retarded development, malformations, displacements, uterine and peri-uterine hemorrhages, tumours and structural disease; the pathology of the bladder, vagina, and external genitals; the physiology and pathology of the breasts; the diseases of pregnancy, labour, and child-bed; appendages of fœtus, extra-uterine and multiple pregnancy; remedies; obstetrical operations.

The second report is divided into nine sections, which treat respectively of the manuals that have appeared during the past year, general pathology, dietetics, statistics, etc.; dyscracic and toxæmic diseases; diseases of the organs of digestion, circulation, respiration and of the nervous system; of the skin and sensory organs; of the genito-urinary system; of the motory organs.

These reports present features equal in interest with those of the first or original department of the volume. They embrace a large amount of highly valuable information; much of it derived from sources access to which is denied, by almost uncontrollable circumstances, to a very large portion of the profession. The editors have made their selections from the leading journals and other publications of the day, with great judgment, and have so arranged and classified them as to render their reports a useful and instructive handbook of the recent additions and improvements in scientific and practical medicine, within the departments to which the reports are specially restricted. We trust that they will receive such an amount of approval and support from their professional brethren as will warrant them in continuing to prepare and publish similar reports through the current and succeeding years. D. F. C.

ART. XX.—*Observations on the History, Pathology, and Treatment of Cancerous Diseases.* Part I. *Melanosis.* By OLIVER PEMBERTON, Surgeon to the Birmingham General Hospital. London, 1858. Pp. 38, with four coloured plates.

THIS brief essay purports to be the first of a series on the several forms of cancer, and is limited strictly to the consideration of melanotic cancer. After a survey of the bibliography of the subject, the author states that the most frequent seat of the disease, when it is a primary affection, is in the skin or the eye. "It has been observed also in its first form in the lower jaw, in the testicle, vagina, and rectum, and it is said likewise to have been seen in the liver. The case is not, however, completely authenticated." (Pp. 5.)

As a secondary deposit, "there is hardly any tissue of the body, in which, in some one or other of the previously described forms, melanotic cancer has not been found." (Pp. 7.)

After describing the various appearances presented by the disease in its several situations, as described by the writers on the subject, the author proceeds to give the details of two cases of melanotic cancer observed by himself in the hospital to which he is attached. These two cases were both examples of melanotic cancer of the skin, the primary disease being seated, in Case I., on the back, and in Case II., on the cheek; they are detailed at length from the commencement of the disease to the fatal termination, including the results of the post-mortem examinations. The four plates which accompany the work illustrate these cases.

To the investigator, the whole value of the essay lies in the history of these two cases, as the remaining contents of the work are derived from sources already sufficiently familiar. The young practitioner, however, will take interest in what must be pronounced a carefully compiled survey of the little that is known of this rare form of cancer.

The author presents a resumé of twenty-five published cases, the history of many of which is sufficiently incomplete; from these he is able to present the following slender statistics:—

Of eight primary melanotic cancers of the skin, the average duration of life was somewhat more than three years and ten months. In four, of the eye, the average duration was two years and eight months. Of fourteen primary melanotic cancers of the skin, the average duration of life, *after the operation*, was twenty-seven months. Of eight, of the eye, the average duration was sixteen months.

The microscopic structure of melanotic cancer is disposed of in ten lines, illustrated by a woodcut, copied from Carl Wedl's "Rudiments."

The melanosis of Mr. Pemberton is simply melanotic or pigmental cancer, or, to use his own words (pp. 37), "medullary cancer, with black pigment superadded." But while thus throughout the essay the term melanosis is used synonymously with melanotic cancer, the last paragraph of the work renders it very evident that Mr. Pemberton is acquainted with another melanosis, which is *not cancerous*. For he says (pp. 37): "The description that I have previously given of melanosis will be quite sufficient to distinguish it from every other disease, with the exception of non-malignant melanosis of the skin."

It is quite evident, then, that there exists for Mr. Pemberton a "non-malignant melanosis of the skin." Nay, he has evidently made its near acquaintance, for he describes its characteristics. "Non-malignant cutaneous melanosis generally arises in many spots, and these of large size, at the same time. They are, moreover, of a deep black colour; and they never give rise to cachectic symptoms." (Pp. 38.)

But it appears to us that the existence of a *non-malignant* melanosis, whether of the skin, or of any other organ, at once prevents the possibility of using the terms "melanosis" and "melanotic cancer" synonymously. And in view of the fact that brownish or blackish pigmental deposits may occur in almost *any* normal texture, and in almost any new formations it would seem better to banish the term melanosis, and speak of cancer with pigment deposit, of nævi with pigment deposit, &c. &c., instead of applying a single generic term which may lead to constant misconception. J. J. W.

ART. XXI.—*Disorders of the Blood.* By JULIUS VOGEL, M. D., Professor of Clinical Medicine in the University of Giessen. Translated and edited by CHUNDER COOMAR DEY, Graduate of the Medical College of Bengal. Calcutta, 1856. 8vo. pp. 219.

THIS work is an excellent translation of the *Störungen der Blutmischung*, constituting the 4th section of Virchow's *Handbuch der Speciellen Pathologie und Therapie*. Published several years ago, it has become so well known to the profession that no particular account of it is needed in this place. It is sufficient, therefore, to observe that the work is justly regarded as a lucid, methodical, and accurate exposition of all that is positively known and well established concerning the various alterations in the quantity, quality, and property of the normal blood-constituents, the abnormal accumulation of noxious matters in the blood, and the putrefactive changes which this fluid undergoes in certain diseased conditions of the economy. Rich in well established facts whose practical application to clinical medicine has been frequently and satisfactorily tested, and at the same time remarkably free from all dubious and uncertain details, it constitutes, in fact, a practical, "important, and useful monograph on the subject of blood diseases," and, as such, fully sustains the distinguished reputation and high position of the author.

In its present dress, as a translation from the German into the English, by one whose native tongue is so different from either of these, the work is curiously interesting in a philological point of view. A few years ago, Dr. Mouat, of the Bengal Medical College, translated the "London Pharmacopœia" into the Persian language. He also compiled from the well-known works of Bourgery, Meckel, Sharpey and Quain, Cruveilhier, Ellis, Harrison, and others, an excellent treatise on the "Elements of Anatomy," which he published in the vernacular speech common to both Hindoos and Mohammedans. This treatise was accompanied by an "Atlas of Anatomical Plates," with descriptive letter-press in both English and Hindostanee. Less than ten years ago, Mohammed Alee-el-Baglee, professor of surgery in the Medical School of Cairo, published an elementary surgical work entitled "Me Ghorar el Nagah fi a'Amal el Garrah," or "The Book of Success in Surgical Operations." This is regarded, we believe, as the first work written in Arabic since the decline of oriental learning, after the fall of the Caliphate. Its author was educated in the medical schools of Paris; and his work, therefore, as well as those of Mouat and some others that might be mentioned, such as the translation of Hooper's "Vade Mecum" into Arabic, are remarkable as contributions of learning offered by the West to the East, in return for that knowledge which the former, in ancient times, received so freely from India and Egypt. Chunder Coomar Dey's translation of "Vogel" is still more remarkable, since it exhibits to us the singular spectacle of the Orient placing into the hands of a distant people of the Occident, and their still more distant descendants in the New World, valuable information calculated to alleviate the sufferings of man, but hitherto locked up, to a certain extent, in the difficult tongue of another European people. J. A. M.

ART. XXII.—*A Practical Treatise on Enteric Fever; its Diagnosis and Treatment: Being an Analysis of one hundred and thirty consecutive Cases, derived from Private Practice, and embracing a Partial History of the Disease in Virginia.* By JAMES E. REEVES, M.D. 8vo. pp. 199. J. B. Lippincott & Co.: Philadelphia, 1859.

EVERY new series of observations, in relation to the pathology, diagnosis, and treatment of almost any disease—if sufficiently extended, and, at the same time, carefully made and accurately recorded—is of value. It increases our acquaintance with the varying phases which the malady presents in different patients, in different localities, at different seasons, and in different years. But if thus valuable in respect to well-known diseases, every new series of observations, made in good faith by judicious practitioners, in the same or different localities, becomes doubly so when the question is of an affection like typhoid or enteric fever; of which the true pathological character and relations are still far from being established beyond the possibility of a very reasonable doubt—an affection which, at the same time, is of especial interest to the medical practitioner from its constantly increasing prevalence throughout the United States; and from the fact that in many localities it is taking the place, as it were, of their former endemic diseases —the so-called miasmatic fevers, especially those of a remittent type.

It is such a series of observations in reference to the diagnosis and treatment of enteric fever that Dr. Reeves presents in the work before us. These observations are based upon the analysis of one hundred and thirty cases occurring in private practice, and originally published in the *Buffalo Medical Journal*. To give to the volume more the form of a systematic treatise, the author has not hesitated to borrow largely from contemporary authorities, while he has endeavoured to furnish, from the reports of physicians residing in different portions of the State, an outline of the history of enteric fever in Virginia.

The materials at the command of Dr. R. for the accomplishment of the work he has undertaken, appear to have been respectable as well in regard to quantity as to quality. We are not so well persuaded, however, that of those materials he has always made the very best use. It is very certain that, in many instances,

they have been very unartistically arranged, while, on more than one occasion, the conclusions drawn from the facts he has adduced, do not strike us as bearing that close logical relation to his premises, which is of so much importance in the discussion of all medical questions. His facts, from want of a proper collocation and comparison, do not always tell their own story, and are occasionally of no value, excepting so far as they are found to conform to the truths carefully developed and weighed by preceding observers.

The long string of loose statements brought forward by Dr. R. in proof of the contagious character of enteric fever, do not certainly bear him out in his very positive conclusion on this important point in the etiology of the disease. The statements that have any relation to this point, as given by Dr. R., are too loosely worded, and exhibit too evidently the careless manner in which they have been made, to entitle them to any weight.

Dr. Reeves does not appear to have made any post-mortem examinations with the view of determining the anatomical lesions that are most generally present in the different organs and tissues in fatal cases of enteric fever. The chapter which treats of the pathological anatomy of the disease, is copied entire from Dr. Wood's work on the practice of medicine.

The views of Dr. R. in regard to the actual nature of the fever he describes are purely hypothetical, and expressed in terms so vague and confused as to convey to the reader no very clear idea of even the author's meaning. He supposes "enteric fever to be the result of a specific poison, by some means introduced into the blood; that in the attempt to eliminate this poison from the blood-current, the glands of the bowels, whose office is assigned to be that of eliminating any putrescent accumulations from this fluid (?), become overburdened, and thenceforth result in more or less change of structure; that by such a change the channels also, through which the nutriment reaches the blood, are more or less obstructed; that in consequence of this the blood becomes additionally depraved; and that these causes, primary and secondary, acting together, are capable of giving rise to the several conditions characteristic of enteric fever."

So far as relates to the general analysis of the symptomatology of enteric fever in its several grades—from the mildest to the most malignant—the history it presents of the usual course, complications, terminations, and sequelæ of the disease, the general sketch of its etiology, and we may add, also, of its most appropriate treatment, the work of Dr. Reeves may be consulted with much confidence and profit. It does not, it is true, throw any new light on the nature and causes of enteric fever—it confirms, however, the observations of preceding practitioners in respect to many important points connected with the diagnosis, general progress, results, and treatment of the disease. D. F. C.

ART. XXIII.—*A System of Surgery; Pathological, Diagnostic, Therapeutic, and Operative.* By SAMUEL D. GROSS, M. D., Prof. Surg. in Jefferson Med. Coll., &c. &c. &c. Illustrated by 936 engravings. In two volumes. Philadelphia: Blanchard & Lea, 1859. 8vo., pp. 1162 and 1198.

THE object of this work is to furnish a systematic and comprehensive treatise on the science and practice of surgery, and the aim of the author has been to embrace in it the whole domain of surgery. So short a time has elapsed since the appearance of these two large volumes, that we have not been able to examine them carefully enough to form any judgment of the manner in which the author has accomplished his object; but an examination of the table of contents has satisfied us that the work is unusually comprehensive, embracing many subjects not usually treated of in systematic surgical works, while the reputation and experience of the author justify us in expecting that his present publication will prove a valuable addition to our surgical literature.

In our next we hope to present a full review of these elegantly printed and copiously illustrated volumes, and in the meantime we take pleasure in inviting to them the attention of the profession.

QUARTERLY SUMMARY

OF THE

IMPROVEMENTS AND DISCOVERIES

IN THE

MEDICAL SCIENCES.

ANATOMY AND PHYSIOLOGY.

1. *The Structure of the Ultimate Air-tubes, and the Distribution of the Bloodvessels, of the Human Lung.*—A paper on this subject has been communicated to the Royal Society of London (May 26th, 1859) by A. T. H. Waters, Esqr., of Liverpool. The bronchial tubes terminate in a dilatation, into which open a number of cavities, to which various names have been given, but which the author proposes to call air-sacs. The air-sacs connected with a terminal bronchial twig, with their vessels, etc., constitute a lobulette. The lobulette consists of from six to twelve air-sacs; the latter are somewhat elongated cavities, lying side by side in the lobulette, and separated from each other by thin walls; in shape they are polygonal from mutual pressure of their parietes. They all communicate with the dilated extremity of the bronchial tube, which forms the common mouth or centre of all the sacs; they have no lateral orifices of communication with each other; they often divide or give off other sacs; the air-sacs of one lobulette do not communicate with those of another. The walls of the air-sacs are covered by a number of small, shallow, cup-like depressions, separated from each other by partial septa. These depressions, or alveoli, are very numerous; their number varies, in different air-sacs, from eight to twenty. The lobulettes are supported externally by the pleura, but within the lung, in part by the bronchial tubes and bloodvessels. The membrane forming the walls of the air-sacs in a lung inflated and dried is very transparent; it constitutes, by its projection towards the centre of the sacs, the septa of the alveoli. Each lobulette is distinct and separate from those which surround it. The separation may be sometimes seen in the inflated infants' lung, but the observation of the fœtal lung affords the best proof of it. The author alluded to investigations he had made on the lungs of fœtuses which confirmed the view he had taken of the arrangement of the ultimate pulmonary tissue, and of the separation between the lobulettes. The air-sacs are fully formed before birth, and each lobulette is seen as a little red body attached to an air-tube. By a partial or complete inflation of the fœtal lung, the arrangement of the air-sacs may be distinctly made out. The bronchial tubes at their termination have a special character. A number of alveoli, like those of the air-sacs, is found in their walls. They are best seen in the lungs of some of the lower animals, as the cat. The author has found them in the infant in the last divisions of the bronchial tubes and their dilated extremity; in the adult, only in the dilated extremity. They seem to become obliterated with advancing age. Their existence was first pointed out by Rossignol. The bloodvessels of the lungs: the pulmonary plexus is situated in the walls of the air-sacs; when formed, it maintains a tolerably uniform diameter throughout; the spaces between the vessels, in an injected and inflated preparation, are somewhat larger than the vessels themselves. The branches of

the pulmonary artery do not anastomose until they reach the termination of the bronchial tubes; they anastomose freely in the air-sacs. The author believes that the vessels of one lobulette do not anastomose with those of another; that, consequently, in the adjoining walls of two lobulettes two layers of capillaries lie side by side, and therefore in such situations the blood is not fully exposed to the air on both sides. The radicles of the pulmonary veins issue from the periphery of the lobulettes, and, forming larger vessels, run in the interlobular spaces to the root of the lung. After briefly alluding to the general opinion of the distribution, etc., of the bronchial vessels, the author described the results of his own injections. Injection of the pulmonary artery, so as to fill the plexus, but not the veins, does not inject the vessels of the bronchial tubes; but if the veins are filled, the bronchial tubes become partially injected. Injection of the pulmonary veins, whether the plexus be well filled or not, always injects the bronchial tubes. Injection of a bronchial artery, when fairly within the lung, produces injection of the bronchial tubes, and the fluid returns by the pulmonary veins. It is difficult, in man, to fill the vessels of the extreme bronchial tubes through the bronchial artery. The bronchial veins: the author has never been able to find the so-called deep bronchial veins as venæ-comites of the arteries. The only veins he has found, have been one or two small ones, usually one, at the root of each lung, which, on being injected, were found to terminate in the structures about the root of the lung, and not to accompany the arterics within the lung. From careful injection and repeated examination of a large number of specimens, both of man and the lower animals, the author draws the following conclusions of the distribution and termination of the bronchial vessels. The bronchial arteries are distributed to the bronchi, bronchial glands, bronchial tubes, etc.—both their mucous membrane and deeper parts—the bloodvessels and areolar tissue of the lungs; and they terminate, 1st, those about the root of the lung, in the bronchial veins; 2d, those within the lung, in the pulmonary veins. The bronchial arteries do not establish any communication with the pulmonary arteries. The author concluded by alluding to the views of previous observers.—*Med. Times and Gaz.*, July 16th, 1859.

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2. *Doctrine of Absorption.*—KÖHLER endeavours to show the difference in the rapidity of absorption between starving and fed animals. The animals experimented upon were rabbits, dogs, and pigeons; the substances used, strychnia, hydrocyanic acid, and ether; the channels of introduction, the digestive tube, the peritoneal cavity, the respiratory organs, and the subcutaneous cellular tissue of the back. The inference arrived at is, *that starving diminishes absorption and retards the symptoms of poisoning and death.* This result is contradictory to the views of many physiologists, but is analogous to that obtained by Kaupp in his experiments on the action of loss of blood on the phenomena of poisoning by strychnia. Köhler's experiments exhibit, it must be stated, frequent exceptions to the law he endeavours to establish, but in part these exceptions appear to depend on concomitant circumstances.—*Brit. and For. Med.-Chir. Rev.*, July, 1859, from *Virchow's Archiv.*, vol. xiv., 1859.

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3. *The Mode in which Sonorous Undulations are conducted from the Membrana Tympani to the Labyrinth in the Human Ear.*—JOSEPH TOYNBEE, Esq., read (May 26) a paper on this subject to the Royal Society.

The opinion usually entertained by physiologists is, that two channels are requisite for the transmission of sonorous undulations to the labyrinth from the membrana tympani, viz., the air in the tympanitic cavity which transmits these undulations to the membrane of the fenestra rotunda and the cachela; and, secondly, the chain of ossicles which conducts them to the vestibule. This opinion is, however, far from being universally received. Thus one writer on the physiology of hearing contends that "the integrity of one fenestra may suffice for the exercise of hearing;"[1] another expresses his conviction that "the transmission of sound cannot take place through the ossicula;"[2] while Sir John Her-

[1] Mr. Wharton Jones, Cyclopædia of Surgery, art. Diseases of the Ear, p. 23.
[2] Mr. Brooke, Lancet, 1843, p. 380.

schell, in speaking of the ossicles, says, "They are so far from being essential to hearing, that when the tympanum is destroyed, and the chain, in consequence, hangs loose, deafness does not follow."[1] The object of this paper is to decide, by experiment, how far the ossicles are requisite for the performance of the function of hearing. The subject is considered under two heads, viz: 1. Whether sonorous undulations from the external meatus can reach the labyrinth without the aid of the ossicles as a medium. 2. Whether any peculiarity in the conformation of the chain of ossicles precludes the passage of sonorous undulations through it.

1. *Can sonorous undulations reach the labyrinth from the external meatus without the aid of the ossicles as a medium?* This question has often been answered in the affirmative, apparently because it has been ascertained that in cases where two bones of the chain have been removed by disease, the hearing power is but slightly diminished. In opposition to this view, it must, however, be remembered that the absence of the stapes is always followed by total deafness, while a fixed condition of this bone (anchylosis) is accompanied by very serious deafness. The following experiments, selected from several others, demonstrating the great facility with which sonorous undulations pass from the air to a solid body, indicate that the stapes, even when isolated from the other bones of the chain, may still be a medium for the transmission of sounds to the fenestra ovalis and the vestibule.

Experiment 1. Both ears having been closed, a piece of wood, five inches long and half an inch in diameter, was held between the teeth, and a vibrating tuning-fork C having been brought within the eighth of an inch of its free extremity, its sound was distinctly heard, and it continued to be heard for between five and six seconds.

Experiment 2. Three portions of wood, of the same length and thickness as that used in the previous experiment, were glued together so as to form a triangle somewhat of the shape of the stapes; the base of this triangle being placed against the outer surface of the tragus, the tuning-fork C, vibrating within a quarter of an inch from its apex, was heard for twelve seconds.

2. *Is there any peculiarity in the construction of the chains of ossicles to prevent the passage of sonorous vibrations through it?* This question has also been answered in the affirmative, on account of the various planes existing in this chain, and of the joints between the several bones composing it. The following experiments, selected from a variety detailed in the paper, indicate that neither the variety of the planes existing in the chain, nor the presence of its joints, prevents the passage of sonorous undulations through it.

Experiment 1. Two pieces of wood, each five inches long, were glued together so as to represent the planes of the malleus and the incus, a triangular piece being glued to one surface of the inferior extremity of the portion representing the incus so as to imitate the plane of the stapes. Three pieces of wood, each five inches long, were glued end to end so as to form a straight rod. The vibrating tuning-fork C, being placed at one extremity of the apparatus representing the chain of bones, and the other end being placed between the teeth, the sound was heard most distinctly for several seconds, and when it ceased to be heard the straight rod was substituted, and the sound was again heard, but only for three seconds.

Experiment 2. Between each of the three pieces of wood, representing the chain of bones, similar to those used in the previous experiment, were placed, instead of glue, two layers of India-rubber about as thick as ordinary brown paper; these pieces being held tightly together, the tuning-fork, applied at one extremity of the chain, was heard as distinctly and as long as in the previous experiment.

The experiments, dissections, and observations recorded in this paper induce the author to arrive at the following conclusions: 1. That the commonly received opinion that sonorous undulations pass to the vestibule through the chain of ossicles is correct. 2. That the stapes, even when disconnected from the viscus, can still conduct sonorous undulations to the vestibule from the air. 3. So far

[1] Encyclopædia Metropolitana, art. Sound, p. 810.

as our present experience extends, it appears that in the human ear sound cannot reach the labyrinth from the membrana tympani without the agency of two media, viz., the air in the tympanic cavity, and the chain of ossicles.—*Med. Times and Gaz.*, June 18, 1859.

4. *Identity of the Meconium and Vernix Caseosa.* By Prof. FORSTER.—The general opinion respecting the meconium is, that it consists in a mixture of bile, intestinal mucus and intestinal epithelium; but microscopical examination shows that besides the colouring matter of the bile it is composed chiefly of the vernix caseosa. For the most part it consists of small flat scales, which present all the characteristics of horny epithelial plates completely corresponding to the horny scales of the vernix. Under the microscope, the meconium only differs from the vernix by the presence of the yellow colouring matter and the smaller number of fat-globules. A proof of the identity is its containing minute hairs in just the same numbers as the vernix, which, indeed, without the microscope, may be separated from it by a needle. The horny scales could have no other source than the vernix, for the stomach and intestinal canal are lined with cylinder epithelium, and the mucous membrane of the mouth and œsophagus does not give rise to them. Besides these scales, we observe in the meconium fatty globules of different sizes, crystals of cholesterine, and irregular yellow and brownish clodlets, which give the dark colour to the meconium, and are doubtless biliary colouring matter. The fatty globules are evidently of cutaneous sebaceous matter, and the cholesterine is in part derived from the bile, and in part from the decomposition of the vernix during its passage to and deposit in the rectum.

The fœtus swallows from time to time some of the liquor amnii having the vernix swimming in it, and the hairs and horny scales pass unchanged along the intestinal tract. Whether any of the sebaceous matter is taken up by the lacteals may perhaps be determined by microscopical examination of the intestinal villi of the fœtus; and it would be interesting to determine, by numerous examinations of the intestinal canal, at what period this swallowing of the liquor amnii commences. As the elements of the vernix are only suspended in the liquor in small quantities, a large quantity of this must be gradually swallowed to lead to the amount of meconium usually present. The water must be soon absorbed from the stomach, as it is never found in it. The greater portion is probably excreted by the kidneys, and again reaches the amnios. That it in nowise contributes material to the nourishment of the fœtus has been shown by Bischoff; but that does not prevent it serving some purpose in the economy. A regular examination of the entire contents of the intestinal canal in numerous fœtuses of different ages, is required to elucidate these points; and especially would such examination be of interest in the case of monsters. That the acephalæ have no meconium has long been known, and has usually been attributed to the absence of the liver. This would, however, only explain the absence of its dark colour; and the meconium will only be wanting when, by reason of the malformation of the intestinal canal, the reception and transport of the liquor amnii holding the vernix caseosa are prevented.—*Med. Times and Gaz.*, June 11, 1859, from *Wien Wochenschrift*, 1858, No. 32.

MATERIA MEDICA AND PHARMACY.

5. *On the Administration of Belladonna, and on certain Causes which modify its Action.*—A paper on this subject was read before the Royal Med. and Chirurg. Society (July 5) by HENRY W. FULLER, M. D. The author was led to the inquiries which form the subject of this paper by observing the remarkable tolerance of belladonna exhibited by a child, a patient in St. George's Hospital, to whom he was administering it as a remedy for chorea. Fancying that the tolerance of the drug observed in the case in question might be attributable

either to imperfection of the extract or to the modifying influence of the choreic spasms, he obtained other extracts of belladonna from Apothecaries' Hall, from Squire's, and from Jacob Bell's, in Oxford Street, and administered it, dissolved in water, to ten other choreic patients in the hospital. In a twelfth case, he administered atropine, obtained from Morson's, in Southampton Row. The result was in all cases the same—namely, extraordinary tolerance of the remedy, with a varying, but not very satisfactory, effect as regards the subjugation of the choreic spasm—the tolerance of the drug being so great that one girl, aged ten, took seventy grains of the extract of belladonna daily, and a total amount of one thousand and nineteen grains, or rather more than two ounces, in twenty-six days; whilst the child, aged fourteen, to whom the atropine was administered, took no less than thirty-seven grains in eighteen days. 1. The patients were all pale whilst taking the larger doses of the drug; and, in no instance, was there any feverish heat, or any rash or erythematous blush on the skin. 2. There was great weakness of the pulse in all the cases, and, in some, considerable quickness. 3. The urine was generally clear and acid, but scanty, and of high specific gravity, varying from 1024 to 1036. In three cases it frequently contained a copious deposit of crystallized lithic acid; and, in three other cases, it was usually loaded with lithates. In one case, for the space of a few hours, whilst the patient was under the toxical influence of a drug, it became ammoniacal almost as soon as voided. 4. In one case some difficulty was experienced in voiding the urine; but this was not observed in any other case. This difficulty passed off when the belladonna was omitted. 5. The tongue was always moist, but unusually red whilst the larger doses of belladonna were being taken, and the redness passed off when the drug was omitted. 6. The remedy did not, in any instance, exert a constipating effect; on the contrary, it appeared to prove aperient. An occasional purge was required only in three cases. 7. In five cases it ultimately gave rise to sickness and diarrhœa; but in every instance, save one, the choreic spasms had almost wholly ceased, and, in the exceptional case alluded to, had greatly subsided before those symptoms were produced. Whenever bowel symptoms occurred, mere omission of the medicine sufficed to cause their cessation. Did the existence of spasm counteract the influence of the drug and prevent their occurrence? 8. Dilatation of the pupils was very uncertain. In almost every instance the pupils were large before the administration of the medicine was commenced, and they invariably became dilated soon after a dose of the medicine was taken. The dilatation, however, was not to the degree observed when a solution of belladonna is dropped into the eye, and, in most of the cases, it passed off before another dose of the medicine was due. Its ordinary duration was about two hours and a half. In one case, excessive dilatation occurred for a few hours coincidently with the occurrence of sickness and purging. In two cases considerable dilatation was pretty constant; in one case it was seldom great. 9. In two instances only did the slightest indistinctness of vision occur. In one of these it was observed only on three occasions, and then only to a slight degree, and was not accompanied by dryness of the throat, headache, or any impairment of the mental faculties; in the other, it took place more frequently, and, strange to say, was most complained of when the pupils were of their natural size, and were contracting freely under the stimulus of light. It was not attended by delirium, nor by any indication of the action of belladonna, and the administration of an additional quantity of the drug was almost invariably followed by its removal. 10. The drug did not, in any case, produce the slightest narcotic effect; and, in one case it failed utterly as an anodyne. 11. In no instance was there any evidence of its accumulation in the system. 12. The tolerance of the drug was not in proportion to the severity of the choreic spasms. In Case 2, in which fourteen grains of the extract, daily, occasioned sickness and purging, the spasms were more severe than in Case 11, in which seventy grains were taken daily without disturbance of the stomach and bowels. 13. The curative effect of the drug was very uncertain. In seven cases its action appeared to be decidedly curative, but in two cases it failed to exercise the slightest control over the spasms; and in the other three cases, it is doubtful whether the improvement ought to be attributed to its action. Being desirous of ascertaining whether the tolerance of the drug was due to its decom

position in the stomach, or to its non-absorption, the author submitted to Dr. Marcet and Mr. Kesteven for examination some of the urine voided by a patient in Roseberry Ward, who at the time was taking sixty-four grains of the extract of belladonna daily. The former extracted atropine enough from three ounces of the urine to kill two white mice, and narcotize several others. The latter, from two ounces of the urine, obtained sufficient to produce dilatation of a cat's eye, to afford the beautiful filamentous crystals of atropine now laid before the Society, and to give the reactions which atropine yields with iodine water, tannic acid, chloride of gold and sulphuric acid, and bichromate of potash. The feces also, on being analyzed by Dr. Marcet, yielded abundance of atropine. Thus, then, up to this point, five facts appeared proved: 1st. That in cases of chorea extraordinarily large doses of belladonna and atropine are tolerated. 2d. That the drug is absorbed into the blood, and, therefore, that the tolerance of it is not attributable to its non-absorption, nor to its being decomposed in the stomach. 3d. That it does not accumulate in the blood, but passes out of the system with the urine and feces, and probably with the other excretions. 4th. That it does not exercise that amount of control over the choreic spasms which would have been expected from the readiness with which it is tolerated by the system. 5th. That the tolerance of the remedy is not in proportion to the severity of the choreic symptoms. The question, therefore, arose as to whether the existence of chorea had any part in producing tolerance of the drug, or whether that tolerance may not have been due to some other circumstances? With the view of determining this point, the author administered the extract of belladonna to two convalescent children, whom he kept in the hospital for the purpose. To the one, aged seven, he ultimately gave thirteen grains of the extract daily, and to the other, aged ten, twenty-eight grains daily, without producing dryness of the tongue or fauces, or any symptom indicative of the action of belladonna beyond some temporary dilatation of the pupils. With the view of having the matter tested with children on a larger scale than is possible at St. George's Hospital, the author requested a friend, who is attached to a large public institution for children, to administer it cautiously in gradually increasing doses. Accordingly, to eleven children, varying in age from three to six, one-eighth of a grain of the extract in solution was administered three times a day, and the dose was increased in the course of six days to half a grain thrice daily. To four other children, from eight to twelve years of age, a quarter of a grain of the extract was given, and the dose was increased in the course of six days up to one grain three times daily. These children were all in good health; the dose was gradually increased, and dilatation of the pupil was the only effect produced. To seven other children, between five and seven years of age, he began by giving one-third of a grain twice a day, and continued it for three days without perceiving any effect from its administration beyond slight dilatation of the pupil. He then prescribed two-thirds of a grain twice a day; but by mistake one grain and a third was given at a dose. The result of this large and sudden increase was that the children were all seized with sickness and vomiting; some of them had diarrhœa, and one of them had the violent uncontrollable delirium characteristic of belladonna. Stimulants were at once administered, the belladonna was omitted, and on the following day the toxical effects of the drug had passed off, and the children were perfectly well. To adults, the author administered the drug in pills, and in solution, and he found that, however given, very small doses usually produce dryness of the tongue and fauces; that two grains daily will often excite vertigo and dizziness, and that it is not possible to establish a tolerance of the larger doses as in children. He was thus led to the conclusion that: 1st. The tolerance of belladonna is not attributable to the counteracting influence of choreic spasms, but is in some way connected with the age of the patient. 2dly. That a much larger dose than is usually prescribed is well borne from the first by children of tender years. 3dly. That in children, though not so in adults, a tolerance of the remedy is speedily established, so that the dose may be safely increased, rapidly, but gradually. 4thly. That special care should be taken in apportioning the dose to the age of the patient, and in not increasing the dose too rapidly, inasmuch as the usual toxical effects of the drug will be produced if too large a dose be given before a sufficient tolerance of the drug

has been established. 5thly. That the milder toxical effects produced by the drug are of little importance, and subside without remedies as soon as the administration of the medicine is discontinued. 6thly. That adults cannot tolerate the doses of the drug which can be taken with impunity by children. The extraordinary difference in the tolerance of the drug observed at different periods of life, the author remarks, may be explicable by the medicine passing off with the urine, as also, probably, with the other excretions, more rapidly in childhood than in adult life; and he concludes his paper by the following suggestions: 1st. That inasmuch as belladonna is admitted to be productive of signal benefit in hooping-cough, even in the minute doses in which it has been hitherto administered, it is probable that a corresponding increase of benefit would result from the larger doses, which it is now proved may be safely prescribed under certain restrictions. 2dly. That it deserves a trial in epilepsy, laryngismus stridulus, and other spasmodic affections. 3dly. That combining as it does antispasmodic, sedative, and slightly purgative properties, it may be productive of relief in certain cases of dyspepsia connected with infra-mammary pain, flatus, and spasms in the abdomen. 4thly. That inasmuch as it exercises a remarkable power in controlling spermatorrhœa and incontinence of urine, and the experiments recorded in this paper prove that it is excreted with the urine, it is highly probable that its curative action in such cases may be due in great measure to its topical effect, and if so, that it might be applied locally with advantage.—*Med. Times and Gaz.*, July 23, 1859.

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6. *On the External Use of Medicines.*—Mr. J. B. Thomson, in a recent paper (*Edinb. Med. Journ.*, July, 1859), states that his attention has been drawn to this subject by an article in the *Bull. Gén. de Thérap.* by M. Deschamps. Mr. T. gives the following as the results of his professional observation and personal experience for several years:—

1. *Of oily and greasy applications externally.*—M. Deschamps alleges that these do not possess any great therapeutical efficacy. I have been long convinced of the contrary, and the proof seems to my mind satisfactory. During seventeen years' observation, in a district where the population is much employed in woollen manufacture, I came to the following conclusions, viz: that puny and weakly children, in a few weeks after entering the woollen mills, exhibit a marked improvement in physical appearance; that the oils (chiefly olive) among which they work pass into the system by the skin in considerable quantity, relieving scrofulous complaints, and improving the general condition of the operatives. Further, this opinion is established by a comparison of the increased weights of those working in the more oily departments—by the comparative weights of those young persons employed in the cotton and those in the woollen factories—by a comparison of those in the woollen factories and those without in the same locality—and by the declension in weight when individuals are taken from the more oily to the less oily occupations of the factory.

Applied as medicaments, we have the testimony of various practitioners of note to the efficacy of oil-inunction, and especially of Professor Simpson, who has written a valuable pamphlet on the subject. M. Deschamps tells us that he composed a soap with iodide of potassium, and after rubbing it four times upon his epigastrium, and analyzing the urine in the intervals of the frictions, he found it to contain appreciable quantities of iodine. Let him try the experiment with ʒij of the iodid. potass. to ℥j of lard, and he will find the same result; or let him rub into the epigastrium ʒj of tr. opii and ʒij of olive oil, and within half an hour it will very likely set him quietly asleep. At least such is the usual result of my personal and professional experience. I think it is generally admitted that the most remarkable effects of the external applications of mercury and iodine are in the form of unguents.

2. *Of medicines of an anodyne nature applied externally by means of plasters.*—I beg to add the following from my note-book:—

M. S. had a belladonna plaster applied to the forehead for neuralgia. Within six hours from the application she was delirious, with pupils much dilated. The plaster was removed, and the delirium and dilatation went off. The experiment was repeated with the same result.

A. L. had a belladonna plaster applied to the pit of the stomach, and soon after became surprised at the incoherency of her ideas, and wandering state of her mind. The pupils were dilated also. The plaster was removed, and the symptoms went off. I repeated the application, and the same results followed. In at least six other cases I have seen the same effects.

Opium plasters, applied to the stomach, I have in several instances found also to produce narcotic effects.

In two of the cases, where the belladonna plasters were applied to the lumbar region, the symptoms were more slightly observable; and my experience of the external application of medicines leads me to the belief that these are *most effectual* when applied to the *epigastric region.*

3. Of medicines externally applied, *tinctures* have been found in my hands most rapidly absorbed. Take the following examples:—

M. N. had occasional attacks of delirium tremens, under which she became excited and sleepless. When she first applied to me I gave her forty drops of the liquor morphiæ, repeated within three hours, without any effect, during two successive nights. The third night, thirty drops of the tr. opii were rubbed upon the epigastrium, after which a quiet night ensued. This patient came frequently under my care for the same complaint, and I always found the infriction of half a teaspoonful of tr. opii induce sleep. Taught by this case, I have not for many years given opium internally (but have been generally successful with the above treatment) in such cases.

W. R., subject to periodic attacks of insanity, attended with sleeplessness. I seldom could bring on complete sopor, but a subsidence of his violence generally followed the rubbing on the epigastrium of a teaspoonful of tr. opii.

In cases of intestinal spasm, where laudanum and ether given inwardly failed, I have often seen relief speedily ensue from laying over the abdomen hot cloths sprinkled with a teaspoonful of tr. opii or tr. hyoscyami.

In order to be thoroughly satisfied of the *post hoc* and *propter hoc* in my practice of endermic medication, I have experimented largely upon my own person with narcotics.

After infriction of the epigastrium with half a teaspoonful of laudanum (which I have tried fifty or sixty times) I have experienced as follows: The pulse rises—the ideas increase in activity—incoherence and confusion ensue—a sense of fulness in the head—perspiration—and in from twenty to twenty-five minutes after the application sleep unconsciously takes place.

With chloric ether and sulph. ether very similar effects follow: The pulse rises and becomes full—perspiration succeeds—then incoherency of ideas and sleep. In some instances, with chloroform, chloric ether, sulphuric ether, laudanum, and tr. hyoscyami, if complete sleep does not occur, there is excitement and dreaming, and for at least twelve hours a sense of drowsiness.

I have experimented on the different effects of these substances on different parts of the body: If applied to the frontal or occipital region the same takes place—rubbed into the hands and feet, rather more is required, say a teaspoonful of the above named narcotics; but I find that the epigastrium more rapidly and successfully absorbs all these substances.

I have observed that the conditions of the system, especially the state of the stomach, deserve to be attended to particularly. If the endermic medication is made when the stomach is disordered, or while in a state of repletion and actively engaged in the process of digestion, the disturbance of the system is greater, and dreams and confused imperfect sleep are the result.

In smaller doses than I have mentioned, the narcotic, when repeated every three or four hours, slowly but surely produces soporific effects.

The practical lessons I learn, from ample trials made upon my patients and upon myself for many years, are as follows:—

1. That endermic medication is entitled to much greater attention by the general practitioner than it has received. The endermic, or, as it was at one time called, the iatraleptic, method of medication seems to me to have been almost altogether ignored by the profession. I find almost entire scepticism on the subject prevail as to the possibility of introducing agents through the unbroken skin of the human body. When a student, I was indoctrinated into the belief,

from the professorial chair, that the epidermis must be first removed by a blister, and the denuded part powdered with the medicament, before cutaneous absorption took place; and even then it was trifling, and only strong poisons could be so absorbed into the system efficaciously. I hold very different views indeed; nor am I without the concurrent testimony of a few medical authorities.

Several physiologists agree in having proved that water, at 82° of Fahrenheit, is taken into the body, giving increased weight. Several alkaline substances, rhubarb, and colouring matters, dissolved in baths, have been detected in the urine of those subjected to baths holding these substances in solution. Vaccine vesicles have been procured without puncture, *by keeping lymph in contact with the unbroken skin*, and excluding it from the air by a coating of blood. Vegetables and some small animals, steeped in laudanum, are paralyzed. An aqueous solution of opium produces this effect on the barberry and the sensitive plants; on the frog and mouse. Dr. Christison admits that opium has been known to act through every channel by which it can pass into the system, by the unbroken as well as the broken surface; and I doubt not, in these days of refined and ingenious systems of poisoning, may be used as poison. A case is narrated where an opium poultice to the blistered scrotum produced profound sopor, and the cause was happily discovered in time to save life. A child of two months old nearly perished from a cerate, containing fifteen drops of laudanum, kept twenty-four hours upon a slight excoriation; insensibility and convulsions having supervened therefrom. A soldier having erysipelas was ordered a lint-seed meal poultice with fifteen drops of laudanum sprinkled on it, and next morning deep sleep, convulsions, twitching, and death followed. The attendant had thoughtlessly poured on and soaked the poultice with laudanum to the extent of ℥j. Added to these facts, we have the certain results of mercury, iodine, etc., to prove that endermic medication deserves a higher consideration in medical practice than it has yet received from the profession.

Another lesson from these facts is—

2. That the evil effects of opiates introduced by the mouth may be, and ought to be, avoided by the adoption of endermic medication. Where there is biliary disorder, the internal administration of narcotics is often injurious, by impairing the tone of the intestinal canal; and my own experience leads me to the assurance that the external application is at least equally efficient as a remedy. In inflammation of the stomach and bowels, opiates internally produce constipation, diminish the vital energy of the whole canal at the very time when every effort is called for by the *vis medicatrix* to arrest and repair disease and disorganization. The application of narcotics *ab extra* seems to lead to their absorption into the blood, so that they act generally as well as locally on the system.

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7. *On the Medical Administration of Ozonized Oils.*—Dr. Theophilus Thompson read an interesting paper on this subject before the Royal Med. and Chirurg. Society June 28th, 1859.

The author, after some general remarks on the properties of ozone, describes the results obtained from its administration in association with oils; the oils being ozonized by exposure for a considerable time to the direct rays of the sun, after previous saturation with oxygen gas, according to the process adopted by Mr. Dugald Campbell. The cases of fourteen consumptive patients to whom the ozonized oils were given are detailed; and the principal facts noted are also appended in a tabular form. The conclusion to which these experiments point is, that the administration of ozonized oils has a remarkable tendency to reduce the frequency of the pulse. Of the fourteen patients whose cases are detailed in this communication, there are only two in whom no such effect was observed; and although in a few instances the effect may have seemed insignificant or transient, in the larger proportion it was very considerable, and must be attributed to the ozone rather than to the oil, since it was repeatedly manifested in patients who had taken cod-liver and other oils without any reduction, or even with an acceleration, of the pulse; and further, the effect on the pulse was nearly as distinct when the ozone was associated with the oil of the cocoa-nut, or of the sunflower, as with that of the cod-liver. This circumstance is the more significant, since the administration of sunflower oil without ozone has not ap-

peared to the author to manifest any important remedial power. The reduction of pulse was usually observed in two or three days, and often continued progressive. A reduction of twenty beats was observed in certain cases to occur respectively in two, three, four, and six days; in other instances a reduction was noted of twenty-four pulsations in fourteen days, thirty-four in thirteen, thirty-six in twenty-two, forty in eleven. In one patient the pulse fell as low as 60—probably considerably below the natural standard; but in most of the favourable instances the reduction stopped when that standard was obtained. The apparent effect of the remedy is one which, prior to experiment, the author would not have anticipated. No other obvious result was noticed, excepting a general improvement in the patient's condition. In some of the patients the use of simple and of ozonized oils was alternated. In one case the alternation was made three times, and the result was in each interchange of treatment so direct and remarkable as to make that particular example equivalent in force to three experiments. In addition to the patients under his own observation, the author refers to four instances noted by Dr. Scott Alison, who obligingly pursued the investigation during Dr. Thompson's absence from the hospital. In these four cases the disease was in the third stage. In two, a remarkable reduction in the rapidity of the pulse, amounting to about twenty beats, occurred under the use of the ozonized oil, while the improvement induced could not be referred to any other cause. Dr. Alison remarks: "I attach some value to this observation; for I prescribed the oil totally divested of all prejudice in its favour, and I have always been reluctant on imperfect grounds to refer results to the operation of medicines. If ozonized oil can reduce the rapidity of the circulation—a feature of great prominence in phthisis—this remedy possesses a most valuable property, rendered still more valuable by its contributing at the same time to improve the general health." The author mentions having used ozonized oil of turpentine with marked and prompt advantage in some cases of hæmoptysis, but has not sufficiently repeated the experiment to feel entitled to express an opinion as to its remedial superiority over ordinary turpentine. He adds that, should more extended observation establish for ozonized oil the property indicated by these experiments, it will prove a valuable addition to our list of remedies, especially in consumption (which is a disease peculiarly characterized by hurried action); but not, perhaps, exclusively in this disorder, since there are other morbid conditions in the treatment of which it is very important to lower the pulse without reducing constitutional strength.—*Med. Times and Gaz.*, July 16th, 1859.

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8. *Glycerine Ointment for Itch.*—M. BOURGUIGNON, so well known in Paris by his successful researches on "the acarus scabiei," has published in the *Gazette Médicale* the following formula. One general friction, not preceded by soap ablutions, is sufficient: Yelks of two eggs; essence of lavender, lemon, and mint, of each seventy-five drops; essence of cloves and cinnamon, of each 120 drops; gum tragacanth, half a drachm; well pounded sulphur, twenty-six drachms; glycerine, thirty-two drachms. Total weight, nearly eleven ounces. Mix the essences with the yelks of egg, add the gum tragacanth, make a good mucilage, and then add very gradually the glycerine and sulphur.

Many cures have been obtained by this preparation, which has the advantage of giving no pain.

The well-known Helmerich ointment being really useful, M. Bourguignon has modified it, and substituted glycerine for the axunge. In the altered form the preparation is not any dearer, and is as efficacious, and less painful than the original ointment. It does not grease the clothes, and has an agreeable perfume. Gum tragacanth, fifteen grains; carbonate of potash, thirteen drachms; well pounded sulphur, twenty-six drachms; glycerine, fifty-two drachms; essence of lavender, lemon, mint, cloves, and cinnamon, of each fifteen drops. Total weight, nearly eleven ounces. Make a mucilage with the gum and one ounce of glycerine, add the carbonate, mix until it is dissolved, and then gradually add the sulphur and glycerine; lastly, pour in the essences. With this compound, M. Bourguignon advises two general frictions of half an hour, within twelve hours of each other, and followed, twenty-four hours afterwards, by a simple warm bath, as the glycerine is soluble in water. Two-thirds of the preparation should be used for the first friction, and the other third for the second.

9. *Pigmentum Album in some Cutaneous Maladies.*—Mr. Alfred Freer calls (*Lancet*, June 18, 1859) the attention of the profession to the great value of white paint as a remedial agent. Mr. F. states that in *erysipelas* the most striking benefit results from its application. "After erysipelas," Mr. F. says, "the paint proves of the greatest service perhaps in eczema in its several forms. In chronic eczematous eruptions of the aged it affords much comfort, and often speedily effects a cure. Of late years I have extended its employment to other complaints of the skin, including herpes in its several forms. I have tried it in some cases of smallpox, with the view of diminishing the number of vesicles on the face, and of controlling their size. The latter indication it seems likely to fulfil; but I cannot speak with confidence about the former, the papules being already numerous at the time of my visit. I have also used it in several cases of carbuncle and furuncle. The first was in an instance of a huge carbuncle, situated on the loin of a man, and rapidly extending, notwithstanding free incisions, linseed poultices, and appropriate constitutional treatment. I applied a thick, wide circle of paint round the swelling, and dressed with resin ointment and cotton wool. There was no advance of the disease from that time, the centres rapidly broke up, and recovery took place. It is, however, probable, that the omission of the warm poultice may have contributed to the improvement, for I have often observed that warm poultices, however well made, seem to foster and spread carbuncular inflammations.

"The paint seems to act in two ways: first, and chiefly, as an efficient excluder of the air—that great irritant to the cutaneous surface when disordered; and, secondly, as a direct sedative to the sentient nerve filaments, rendering them less prone to become involved in inflammatory action. In boils it relieves the painful tension, and favours resolution. In some forms of painful ulcers of the leg, of a small size, it gives great relief. In galling of the skin, where anasarca is present, it is also of use, and is the best application that we have in burns of the first and second degree. But it is in erysipelas that its triumph is most manifest; the patient soon finds the comfort of it; the tight shining skin soon becomes wrinkled and shrunken; indeed, the inflammation very rarely extends after the second or third painting.

"The manner of applying it is by means of a feather, painting the affected parts and *a little beyond*, and laying on a fresh coat every two hours or so, until a thick layer is obtained, and then sufficiently often to maintain a covering. In erysipelas, it peels off in a week or so with the shed cuticle, leaving beneath a smooth, clean, healthy surface."

MEDICAL PATHOLOGY AND THERAPEUTICS, AND PRACTICAL MEDICINE.

10. *Treatment of Asthma by Coffee.*—Dr. Hyde Salter states (*Edinburgh Med. Journ.*, June, 1859) that "one of the commonest and best-reputed remedies of asthma, one that is almost sure to have been tried in any case that may come under our observation, and one that in many cases is more efficacious than any other, is strong coffee. To the question, 'Have you tried strong coffee?' the asthmatic is pretty sure to answer, 'Yes;' and he is also pretty sure to add that it gives him relief.

"About the *modus operandi* of this remedy I was long puzzled; I could not make it out; and it is only lately that I think I have stumbled upon it. The *rationale* of its efficacy is, I think, to be found, on the one hand, in the physiological effects of coffee—the particular nervous condition that it produces; and, on the other, in a feature in the clinical history of asthma which I have long observed, and of which I think the efficacy of coffee is highly corroborative.

"This fact is, that *sleep favors asthma*—that spasm of the bronchial tubes is more prone to occur during the insensibility and lethargy of sleep than during the waking hours, when the senses and the will are active. I have already

referred to this in my observations on the 'Clinical History of Asthma,'[1] in explaining why the paroxysm invariably (or almost invariably) chooses the hours of mid-sleep for its onset. Let me just refer to this subject again, for it is both interesting and important, as it explains a curious and very constant phenomenon in asthma—the hour, namely, of the attack—is highly illustrative of its pathology, and furnishes the key to some of its treatment.

"I think, then, that sleep favours the development of asthma in two ways—

"α. By producing insensibility to respiratory arrears.

"β. By exalting reflex action.

"The way in which sleep favours the development of asthma, by producing insensibility to respiratory arrears, and exalting reflex nervous action, I have already sufficiently explained in the papers on the 'Clinical History of Asthma' to which I have referred.

"There can be no doubt that sleep *does* exalt reflex nervous action. It is a fact so abundantly inculcated by the history of the disease as hardly to require illustration or proof. The phenomena of epilepsy, cramp, lead tremors, and other examples of deranged muscular action, all teach it. It is just as sleep comes on, just as the will is laid to rest, or during sleep, that these different forms of involuntary muscular contraction most commonly occur. Any one, to convince himself of it, has only to fall asleep sitting on the edge of his chair, in such a position that it shall press on his sciatic nerves. As long as he is awake his legs will be motionless; but the moment he falls asleep they will start up with a plunge and suddenly wake him. As soon as he is awake they are quiet and still again, with no disposition to start, till he again falls asleep, and that moment they start again and wake him; and so he may go on as long as he likes. He changes his position, sits back in his chair, and they start no more. I need not explain what so clearly explains itself. I heard, some years ago, of a case of what might be called chronic traumatic tetanus, in which the source of irritation—the excito-motory stimulant—was extensive disease of the hip-joint. The moment the patient fell asleep he was seized with opisthotonos, which, of course, immediately woke him. On awakening, the tetanus vanished; on again falling asleep, it reappeared; and this alternation of falling asleep and waking continued for weeks, if not for months, the patient getting no continuous rest, till he was quite worn out. As long as he was broad awake the tetanus never appeared.[2] Hosts of similar facts, illustrative of the same truth, might be cited.

"Anything that exalts reflex nervous action increases, of course, the potency of reflex stimuli. Now, I have elsewhere endeavoured to show that the phenomena of asthma are, in almost every case, those of excito-motory action, and that the exciting causes of asthma are, in the great majority of instances, such as act by a reflex circuit. They would, therefore, on the asthmatic's falling asleep, immediately acquire a potency they did not before possess, just as the pressure on the sciatic nerve did, in the illustration I have given. Thus it is we see that the asthmatic may gorge himself with unwholesomes, and yet, as long as he keeps himself awake, suffer no consequential asthma; the irritant is there, the undigested food is in the stomach, but as long as he is awake, as long as the will is dominant, it is inadequate to the production of reflex phenomena. But let him fall asleep, and in an hour or two the paroxysm will be established.

"And not only will *sound sleep* determine, by this exaltation of reflex susceptibility, the production of asthma by its exciting causes, but a small dose of the same condition—sleepiness, drowsiness—will favour the supervention of asthma in a proportionate degree. Not only is drowsiness a premonitory sign of an attack, but a powerful predisposer to it; and the asthmatic knows that he yields to it at his peril. I have often noticed in asthmatics that the sleepiness that is so apt to come on after dinner will be accompanied by a slight asthmatic op-

[1] Medico-Chirurgical Review, July, 1858 and 1859.

[2] I was further informed, respecting this case, that, after everything else had failed, sleep was procured, with an immunity from the tetanic spasms, by putting the patient into the mesmeric state. In this way he got rest, and greatly improved; but what was the ultimate issue of the case I do not know.

pression and wheezing: as the drowsiness deepens, so does the asthma, and in this way it may settle down into an attack; but if the patient rouses himself, or if anything occurs to engross his attention so as to wake him up, broad awake, the asthma quickly vanishes. It is in this way, I think, that is to be explained the fact, that asthmatics can dine out late and unwholesomely with impunity; while, if they dine at the same time and in the same way at home, asthma is sure to come on. At home they want that excitement which at a dinner-party keeps the animal functions in a state of exaltation and the mind vividly awake, and effectually banishes the least approach to drowsiness. Of the fact there is not the slightest doubt. I know an asthmatic who can with impunity dine out at seven o'clock, as dinner-eaters of the nineteenth century are apt to dine—shirk nothing from soup to coffee—walk home at ten o'clock, a distance perhaps of four miles, with the wind of a deer-stalker—go straight to bed, and get up the next morning scathless; but if he were to dine at home at six, or even at five o'clock, he would be wheezing at nine, and by four the next morning downright asthmatic.

"I believe a certain amount of the curative influence of fright, or other strong mental emotion, is to be explained in the same way.

"'But why,' it may be asked, 'all this roundabout digression? What has all this to do with the curative influence of coffee?' I believe it is simply its explanation. For, what are the physiological effects of coffee? They consist in the production of a state of mental activity and vivacity, of acuteness of perception and energy of volition, well known to those who have experienced it, and to a certain extent very pleasurable, and which is the very reverse of that abeyance of will and perception which, in drowsiness or sleep, so favours the development of asthma. In sleep, will and sense are suspended; after taking strong coffee, they are not only active, but exalted. It produces rapidity of thought, vivacity of spirits, clearness of apprehension, increases tenfold the working powers, and altogether intensifies mental processes. Not only is there no disposition to sleep, but sleep is impossible: the thoughts hurry one another through the mind; the bodily movements are energetic and rapid; and if the effects of the drug are pushed far, a very unpleasant condition is produced, something like that of delirium tremens, *minus* its hallucinations. Now, if the suspension of the will, or its depression, favours the production of excito-motory phenomena, and thus favours the development of asthma, is it unreasonable to suppose that its exaltation should prevent or cure it? It *must* do so—if not positively, at least negatively, by removing the predisposing condition. And bearing in mind this marked physiological effect of coffee—that this exaltation of the animal nervous functions is exactly what it produces—it certainly does seem to me reasonable to suppose that this is its *modus operandi*. And if of coffee, then of strong tea, and alcohol, and ammonia, and ether, and other stimulants of undoubted value in asthma.

"To show that this is the *rationale* of the cure of asthma by stimulants I do not think it is necessary to show that it is only when the asthmatic is drowsy, or has been sleeping, that they do good. If anything that rouses the asthmatic to a state of wakefulness will put a stop to asthma that was creeping on him while he was sleeping or sleepy, *à fortiori* anything that carries him beyond a state of mere wakefulness—that gives him an active, not a mere passive wakefulness, will be still more efficacious, and will be adequate to the checking of an attack that, in spite of his being broad awake, was gaining on him.

"The very frequency with which coffee gives relief, makes it hardly worth while for me to narrate the history of any cases. I should think, from my own experience, that coffee relieves asthma in two-thirds of the cases in which it is tried. The relief is very unequal, often merely temporary, and sometimes very slight: sometimes it is complete and permanent. It is often taken in the morning; and patients will tell you, that previous to taking their coffee they are not fit for anything, can hardly move about; but that taking it is immediately followed by freedom of breathing, and an ability to enter at once on their daily occupations.

"There are two or three practical hints with regard to the administration of coffee that are worth bearing in mind.

"1. It cannot be given too strong. Unless sufficiently strong to produce its characteristic physiological effects it does no good, but rather harm; moreover, if given very strong it need not be given in much bulk, and quantity is a disadvantage—its effect is less rapid, and it oppressively distends the stomach.

"2. I think it is best given without sugar and milk—pure *café noir*.

"3. It should be given on an empty stomach; if given on a full stomach it often does great harm, by putting a stop to the process of digestion: indeed, so much is this the case, that I consider coffee accompanying a meal, especially late in the day, so peculiarly apt to induce asthma, that it deserves to be classed among its special provocatives. I have mentioned elsewhere the case of an individual who never dared to take the usual after-dinner cup of coffee—it would make the simplest dinner disagree with him. But the same asthmatic found in strong coffee, on an *empty stomach*, one of his most valuable remedies.[1]

"4. For some reason or other, I don't know why, it seems to act better if given hot—very hot.

"I have adverted just now to the influence of mental emotion on asthma, and stated my belief that its *modus operandi* was, like that of coffee and other stimulants, by producing an exaltation of sense and will—an intense activity of the intellectual part of nervous action—and proportionately lessening the tendency to excito-motion; and this it does to a much greater degree than stimulant remedies, and its effects are, therefore, proportionately more sudden and complete. It was, indeed, the curative influence of violent emotion, and the observation that it and coffee-taking alike banish that condition in which asthma is most prone to come on, that first suggested to my mind the theory of the action of stimulants on asthma that I have just endeavoured to propound. I think, too, that mental emotion acts, if I may so express it, as a nervous derivative. There are many phenomena, both in health and disease, that seem to show that only a certain amount of nervous activity can be in operation at a certain time; and that, if a nervous action of one kind comes into operation, another that had been previously going on is immediately depressed or arrested. Such is the explanation of the well-known experiment of the two dogs, one of which was taken hunting immediately after a meal, while the other was allowed to sleep. In the one that was taken hunting, digestion, on its return, was found hardly commenced; in the other, it was completely over, and the stomach empty. In the sleeping dog the whole vital dynamics, not being otherwise employed, were appropriated by the function of digestion; while in the hunted dog they were entirely taken up by its energetic locomotion, and drafted away, as it were, from that nervous superintendence of digestion without which the function cannot be carried on.[2] The power of strong emotion, or hard study, in retarding digestion, is an analogous fact. Just in the same way, I think, the extraordinary activity and exaltation of thought and perception, that characterize the state of mind

[1] Since writing the above I have received the following account, from an asthmatic gentleman, singularly confirmatory of my own observations:—

"I used to think," writes my informant, "strong coffee the best of all remedies. I remember one instance especially, only a pattern of many others, but more striking when told. With bent back, high shoulders, and elbows fixed on the chair-arms, I had been labouring for breath all the afternoon. About five o'clock I had two breakfast-cups of strong coffee. The hard breathing disappeared rapidly and completely. My sisters were dancing in the next room, and in less than an hour I was dancing with them, quite free from asthma.

"Of late, coffee has often had an opposite effect upon me. The after-dinner cup of coffee, to which I have been for several years habituated, now produces a sensation of stuffing of the chest, and incapacity of moving about. I believe this is because it stops digestion; and the reason I did not suffer for some years I take to be, that my originally most excellent and enduring stomach could stand it so long, and no longer. Coffee, on an empty stomach, I still deem a most valuable remedy. I do not share the prejudice against putting milk and sugar into coffee that is used as a medicine, provided that it remain *café noir*, and be not made *café au lait*."

[2] See Dr. John Reid's experiments, in Todd's Cyclopædia of Anatomy, vol. iii. p. 899; also those of Bernard and of Bischoff, in Müller's Archiv, 1843.

that the taking of coffee, ether, and other stimulants produces, acts as a nervous derivative in asthma, and diverts from the nervous system of the lungs that morbid activity which engenders the spasm of the bronchial tubes.

"The cure of asthma by violent emotion is more sudden and complete than by any other remedy whatever; indeed, I know few things more striking and curious in the whole history of therapeutics. The remedy that stands next in speed and efficacy—tobacco pushed to collapse—takes time, a few minutes at least: but the cure of asthma by sudden alarm takes *no* time; it is instantaneous, the intensest paroxysm ceases on the instant."

Dr. Salter has arrived from the above facts to the following conclusions:—

"That, since the abeyance of the will favours, in proportion to the degree of that abeyance, the development of asthma, and since the effect of strong coffee is to dispel such suspension or depression of volition, and restore the will to its wonted (or even an unwonted) activity, it is by thus exalting the will, and so disfavouring the development of excito-motory action, that this remedy relieves asthma.

"That the same interpretation applies to the relief of asthma by all other stimulants whatever.

"That thus strong coffee and mental excitement, although apparently so different, belong to the same category of remedies for asthma."

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11. *Diagnosis and Treatment of Hepatic Colic.*—Prof. Trousseau lately directed the attention of the clinical class, at the Hôtel Dieu, to the frequency with which cases of hepatic colic are mistaken for other affections. Although, in its severe form, hepatic colic is readily recognized, yet a slighter form, which is more common, especially in women, is very generally ignored. The reason is, that the pains caused by the small calculi are felt principally in the epigastrium, from which they radiate through the abdomen, the chest, the back, and sometimes even down the thighs. The practitioner, accordingly, is very apt to refer the pain to other organs than the liver, and, in particular, to ascribe it to a spasmodic affection of the stomach. This opinion appears, in many cases, to be further confirmed by the presence of vomiting.

M. Trousseau illustrated these observations by two cases, both women, of sedentary occupation, from forty to fifty years of age. In the case of the first, pain in the epigastrium, with vomiting of matter not containing bile, occurred two days before her admission into the hospital. The severe pain was succeeded by a feeling of languor and fatigue. The fecal matters passed by this woman were collected, washed, and carefully examined, when a calculus of the size of a pea, consisting of cholesterine, was found. The second woman had been subject to "cramps of the stomach" for several years. These had been treated without success. When she came under M. Trousseau's care, she had been suffering for several days from attacks of severe pain starting from the epigastrium, and darting down through the belly into the right flank and into the back. These attacks came on two or three times a day, and lasted for from half an hour to two hours. On the 12th of March the pains continued for five hours, on the 13th for eleven hours: they were accompanied by non-bilious vomiting, and on the evening of the last-mentioned day they ceased suddenly, and were succeeded by slight shiverings and well-marked jaundice. The bowels having been confined for some days, a purgative was administered: the fecal matters were washed, and five calculi with polished facettes were discovered.

Before alluding to the treatment, M. Trousseau entered somewhat minutely into a consideration of the symptoms in these and similar cases. He laid it down as a general rule, that if, in addition to pains of the character described above, there be vomiting of matters not coloured with bile, the symptoms depend upon the presence of a calculus in the common duct; and that, ninety-nine times out of a hundred, the presence of bile in the urine will next day confirm the diagnosis. It must, however, be borne in mind that, although the absence of bile in the matters vomited, and the subsequent occurrence of jaundice, entitle us to give a positive diagnosis, the opposite circumstances—namely, the presence of bile in the vomited matters, and the absence of jaundice—do not justify us in absolutely denying the existence of hepatic colic. In most cases the

jaundice is so slight as to escape the attention of the patient; indeed, generally it is only by the condition of the urine that its existence is revealed. In addition to pain, vomiting, and the presence of bile in the urine, another diagnostic means is at our disposal. This consists in an examination of the fecal matters: for this purpose, the evacuations are to be collected from the time of the cessation of the attack during the next three or four days, as a calculus may occupy this time in passing from the duodenum to the rectum. The matters so collected are to be washed in a hair sieve, until the solid matter is completely broken down. Under any other way of proceeding, the calculus might escape detection. It does not always happen, however, that the calculus, the cause of the suffering, is discharged. It not unfrequently happens that there are concretions in the gall-bladder which are too large to pass along the cystic duct. In such cases, the bodies get partially impacted in the duct, and give rise to much suffering; but on their going back into the gall-bladder, the relief is as complete as when they drop into the duodenum. In these circumstances, we are to be guided in our diagnosis by the sudden appearance and disappearance of the symptoms, taken in connection with the absence of symptoms pointing to disease of other organs.

With regard to treatment, nothing can be done to get rid of calculi already existing; our attention must, therefore, be limited to the treatment of the attack of hepatic colic, and to the preventing the formation of fresh calculi. The treatment of the attack is not very satisfactory, and often the remedies employed do more harm than good. Thus many practitioners prescribe opium; but as opium checks all the secretions, with the exception of the secretion of the skin, it is unfavourable to the accumulation of bile in the gall-bladder, which acts beneficially in helping the expulsion of the calculus. The pain, it is true, is deadened by opium, but the expulsion of the calculus is delayed. The relief of suffering is, according to M. Trousseau, more advantageously obtained by chloroform or sulphuric ether given internally, while frictions with an alcoholic extract of belladonna, reduced by water to the consistence of a syrup, are made over the seat of pain. The ether is generally given in the form of capsules, each of which contains eighteen drops; in this way a considerable anæsthetic action is produced, while the biliary secretion is not interfered with. Prolonged hot baths sometimes give relief, though in general they produce little effect. When the attack is past, M. Trousseau generally gives, with a view to improving the digestion, seven or eight pills daily, each containing three grains of extract of ox-gall.

The real treatment of these cases, however, is prophylactic. As above stated, *M. Trousseau* thinks we cannot act upon calculi already formed, although *M. Barth* supposes that, by a vegetable diet, combined with the use of alkalies and turpentine, biliary concretions may be disintegrated. All we can hope for, therefore, is to prevent the enlargement of existing calculi and the formation of new ones; and this we must do by impeding the production of cholesterine. Now, as cholesterine is a fatty substance, we must, in order to diminish its quantity, diminish all the fatty matters of the economy. For this purpose we must look to alkaline substances, which saponify the fats and render them more soluble; to exercise, which promotes their combustion; and to an alimentation which shall contribute as little as possible to their development. *Peyrilhe*, the first professor of therapeutics in the faculty of Paris, noticed that, in large herbivorous animals, such as oxen and cows, which are very subject to hepatic gravel, the gall-bladder was filled with calculi from the month of April to the month of June, and that it ceased to contain any from the beginning of September until the end of December. He thought that the production of cholesterine was favoured in these animals by a dry alimentation, consisting in part of oleaginous grains; while, on the contrary, the chlorophyl, or green colouring matter of plants, acted as a special solvent of this fatty matter. *Peyrilhe* was right; but he had not noticed another important element in their cases—the influence of prolonged repose. In man, a sedentary life acts in the same way as the stalling of oxen; and this is the reason why women are more subject to biliary calculi than men. Green vegetables, though acid, make the urine alkaline; they possess the property of saponifying fats; and you have thus, in exer-

cise on the one hand, and in the use of green vegetables or alkalies on the other, the principal elements of the prophylactic treatment of biliary calculi.

To patients suffering from this affection, we should, therefore, continues *M. Trousseau*, prescribe walking exercise, a regimen having for its basis green vegetables, to which may be added lean meat and fresh fruit thoroughly ripe. The patient should abstain from eating oleaginous matters, such as fat of meat, butter, oil, milk; he should also partake sparingly of amylaceous or gelatinous matters, which, on account of the large proportion of carbon they contain, have the greatest analogy with fat. We may at the same time recommend the use of alkaline mineral waters, such as those of Vichy, the Mont Dore, etc. Not that these are to be given so as to saturate the system with the mineral principles of the waters, but only in such a way as to improve the general health. They should not be given continuously for too long at a time, but their use should be interrupted and again resumed.—*Edinb. Med. Journ.*, July, from *Journal de la Méd. et de Chirurg. Pratiques.*

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12. *Treatment of Diphtheria.*—M. Loiseau, in a communication to the *Gazette Hebdomadaire* (Aug. 19th), urges upon his professional brethren not to use debilitating means in the treatment of diphtheria, and to put their trust in topical and styptic measures. The author adds the following figures, which speak volumes: Out of ninety-five patients treated topically, only two died; one without treatment (we must suppose that the author means that the patient was carried off before the topical treatment could be used), and the other with an imperfect treatment. All the others recovered, without any unpleasant sequelæ, and even without a well-marked period of convalescence. As to the ages of the patients, M. Loiseau divides the cases in the following manner:—

Patients.	Age.	Recoveries.
15	from 0 to 2 years	13
22	" 2 to 6 "	22
9	" 6 to 12 "	9
10	" 12 to 18 "	10
39	" 18 to 60 "	39
Total 95		93

More than half of those whom M. Loiseau attended after they had been treated with emetics and alterants perished, and the greater part of those who recovered suffered subsequently from œdema, anasarca, or paralysis, or had to go through a protracted convalescence.

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13. *Tannin in Large Doses in Albuminous Anasarca.*—Although the internal use of tannic acid is still very limited in France, its employment in large doses has been much recommended lately in other countries, and has been extended to numerous cases which, while proving its innoxious character, appear to exhibit it as possessing some totally new properties. It has been shown to be useful in all cases where it is required to arrest hemorrhages, to give tone to the organism, or to remedy morbid secretions. It has been employed, for example, with great benefit in albuminuria, diabetes, and serous infiltrations.

From these considerations, Dr. P. Garnier has been induced to employ tannic acid in the albuminous anasarca consecutive to scarlatina; and he adduces several cases illustrative of this mode of treatment, drawn from his own experience and from cases recorded by other physicians. The cases all prove that in the general serous infiltration of the tissues complicated with albuminous urine, there is a rapid and simultaneous disappearance of these two morbid phenomena under the influence of tannin alone, administered in a large dose. The conclusions drawn by Dr. Garnier are that tannin, employed in doses of two to four grammes a day (ʒss to ʒj), cures anasarca or œdema developed passively and occurring simultaneously with albuminous urine; that its curative action is manifested by abundant urine, gradually resuming its physiological characters, by perspiration, easy alvine evacuations, return of appetite, &c.; that these signs appear from the second day of the administration of the tannin; that given

in solution in doses of twenty to fifty centigrammes at a time, tannin causes no unfavourable symptoms affecting the digestive passages; and lastly, that the action of tannin appears to be exerted primarily upon the fluids of the economy, the albuminous principles of which it coagulates and renders plastic, and that its consecutive action on the solids appears to be tonic and astringent.—*Brit. and For. Med.-Chir. Rev.*, July, 1859, from *Archiv. Générales de Méd.*, Jan., 1859.

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14. *Local Use of Perchloride of Iron in the Treatment of Membranous Angina.*—Perchloride of iron has been employed with some success in the treatment of membranous angina (*Angine Couenneuse*). M. GIGOT, of Levroux, after having ascertained by experiment the effects of the styptic action of perchloride of iron on fresh pseudo-membranes recently removed from the throats of patients, employed this agent in a certain number of cases of diphtheritic angina, during a severe epidemic of this disease which visited Levroux. He applied the perchloride on the pharyngeal mucous membrane and the diphtheritic exudations by means of a sponge or a piece of lint. The first effect of this application was the immediate expulsion of mucous matters, which were coagulated by the perchloride, and either expectorated by the patient or left adhering to the sponge. The slender and slightly adherent pseudo-membranes were also immediately detached, but the most adherent were removed only in small fragments similar to portions of muscular fibre macerated in water. M. Gigot treated ten patients with this agent, of whom one, an infant four years old, died, from the extension of the disease to the larynx. Of the other nine, there were two in whom the perchloride of iron was replaced, at the end of two days, by the bicarbonate of soda. In these patients the pseudo-membranes were reproduced between each application of the perchloride of iron, and were always easily removed. Lastly, in the seven others the angina was arrested in a few days. M. Gigot never applied the perchloride more than twice in the twenty-four hours. One of the cases was a very well-marked instance of membranous angina in a girl of seventeen, living in a locality where two children had recently died of that disease. There was great swelling of the glands of the neck, fetid breath, difficult deglutition, pulse 110, vomiting, and epistaxis. A grayish pseudo-membrane, of a fibrinous appearance, covered the whole of the right tonsil and extended all along the pillar of the velum palati. The perchloride of iron was applied three times, by means of a piece of lint, over the whole of the pharyngeal mucous membrane as far as the epiglottis, and at the second application the false membranes were detached, their volume was diminished, and they were shrivelled and dried by the perchloride. A gargle of bicarbonate of soda was employed on the same day, and after four days of this treatment the patient entirely recovered.—*Brit. and For. Med.-Chir. Rev.*, July, 1859, from *Gaz. des Hôp.*, Oct., 1858.

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15. *Peculiar Efficacy of Sulphate of Copper in Exciting Vomiting in the Treatment of Croup.* By Dr. MISSOUX.—The importance of repeated vomiting in the treatment of croup is admitted by many practitioners, but the choice of an emetic is a point which has not hitherto been fully determined. Since vomiting has been considered by some as the mechanical act which induces the detachment of the false membranes, tartar emetic has been employed for the purpose. Others have preferred ipecacuanha, the dynamic action of which is less depressing than that of tartar emetic, but there its superiority ends. The sulphate of copper, in addition to its emetic action, possesses a very remarkable property of acting locally, and this peculiarity makes it superior to tartar emetic and ipecacuanha. With the latter substances, the patients derive benefit only from the mechanical act of vomiting, and when the false membranes are expelled, others are formed. The case is quite different with sulphate of copper, for when a solution of this salt is employed, the secreting surfaces are so modified, that no more false membranes are formed, or if they are formed, they no longer present the plasticity which renders them so adherent to adjoining parts. Dr. Missoux, after a practice of eighteen years, states that the sulphate of copper has been in his hands the most successful emetic agent in the treatment of croup.

Its purifying action appears to him the more valuable, because diphtherite (croup) at its commencement is often localized in the throat, and by applying remedies early, the extension of the false membranes to the larynx may be prevented. He wonders that this topical action of the copper salt has not been hitherto observed upon plastic exudations which are visible to the eye, such as cutaneous diphtheria, and that of the vulva, the throat, and the nose, for its effects in these complaints would have induced a speedy conviction of its utility. The dose in which Dr. Missoux administers the sulphate of copper is rather larger than that prescribed by other physicians. For young children he dissolves a quarter of a gramme of the salt in 125 grammes of distilled water, and orders a teaspoonful to be given every ten minutes, until vomiting is produced. After the age of puberty, and in adults, he increases the dose to one gramme, without his having ever witnessed any poisonous effects. The more the solution is concentrated, the more frequently the doses are given, and the earlier its administration is resorted to, the more prompt and certain are the effects of the treatment. Out of thirty diphtheritic cases, Dr. Missoux lost only two. This result may surprise some readers, but he assures the profession that he has determined the existence of croup only after actually observing the presence of the false membranes in the bronchi, trachea, and larynx.—*Brit. and For. Med.-Chir. Rev.*, July, 1859, from *Bull. Gén. de Thérap.*, Dec. 30, 1858.

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16. *Anæmia Lymphatica, a New Disease characterized by Enlargement of the Lymphatic Glands and Spleen.*—Much interest was excited amongst the profession by the announcement of Dr. Wilks, at one of the meetings of the Pathological Society during the past session, that the morbid specimens which he exhibited were taken from a patient in Guy's Hospital, whose disease was new, and hitherto unnamed. The essential features of the disease are the most extreme pallor of anæmia, enlargement of one or more of the various groups of lymphatic glands, either internal or external to the body, and a peculiar morbid condition, with occasional enlargement of the spleen; the last depending upon the deposition of an opaque, white, lardaceous material, in isolated masses, or diffused throughout the substance of the organ, and resembling bacon-rind. The malady is so striking, and yet so peculiar, that when carefully studied it is almost impossible to mistake its identity. Six cases are detailed in the second volume (third series) of *Guy's Hospital Reports*, in a paper by Dr. Wilks, "On Cases of Lardaceous Disease and some Allied Affections." All of them proved fatal, as well as those which have since come under our notice. The peculiarities noticeable in these cases were as follows:—

Case 40.—Enlargement of the lumbar and posterior mediastinal lymphatic glands, forming a chain of tumours along the whole length of the spine upon each side of the aorta; spleen enlarged, opaque white deposits through it: age twenty-four.

Case 41.—Lumbar glands much enlarged, and accompanying the aorta along the spine to the pelvis; mesenteric and bronchial glands enlarged; spleen large, with a number of ovoid white bodies: age nine years.

Case 42.—Cervical, mediastinal, bronchial, and lumbar glands enlarged; spleen four times larger than natural, three-fourths of it resembling opaque white tallow: age ten years.

Case 43.—Lymphatic glands of neck, groin, and around the great vessels in the chest and abdomen, enlarged; spleen had a few white tubercles: age sixteen years.

Case 44.—Great enlargement of the absorbent glands of the neck, axilla, and groin; spleen enlarged, with an infinite number of small, white, opaque deposits: age fifty.

Case 45. (Dr. Markham, 4th vol. *Transactions of the Pathological Society.*)—Enlargement of anterior and posterior mediastinal glands, encircling the arch of the aorta; spleen enlarged, with small yellow masses throughout: age thirty.

Some other instances might be added to these; but it will be sufficient to append the following, shown to the Pathological Society in the course of its last session:—

"Enlargement of the cervical, mediastinal, and lumbar glands; the spleen much enlarged, with white deposits throughout: age twenty-two."

The enlargement of the lymphatic glands, which thus seems the peculiar feature of this malady, is remarkable for the lingering form of fatal cachexia which it produces. The extreme pallor of the patient—as we have witnessed at this hospital—at once attracts the attention of the observer.

In relation to the six cases we have briefly noticed, Dr. Wilks observes, in regard to the symptoms during life and the appearances after death—"Their uniformity is too considerable to constitute merely a coincidence of disease between the glands and the spleen, and therefore there is, without doubt, a peculiar form of affection involving these organs, accompanied by an anæmic cachexia, prostration, and death. I say a peculiar affection; for although allied to the tubercular, I believe it to be one not yet recognized under the ordinary forms of disease."

This affection has been mistaken for scrofula, especially where the glands in the necks of weakly children have commenced to enlarge. It occurs to persons of all ages. It may gradually extend over a period of two or more years, when the thoracic and abdominal glands become involved, and slow prostration precedes death.

The intimate structure of the enlarged glands is a fibro-nucleated tissue, and this is not to be distinguished from ordinary fibro-plastic growths. Dr. Hodgkin described a case of this kind in the seventeenth volume of the *Medico-Chirurgical Transactions*, in which he refers to its connection with a peculiar affection of the spleen; but he affixed no name to it. Dr. Wilks correctly styles it *anæmia lymphatica*, which is a very distinctive appellation, the anæmia being the most important result, and tending to the fatal issue. Moreover, it is a simple and good name for it, as he thinks it indicates the most important condition of the malady, and the one often only recognizable when the enlargement of the glands is entirely within. There is no excess of white corpuscles in this disease similar to that observed in the *leucocythæmia splenica* of Bennett, but rather a deficiency of the red, as was observed in the following case, for the notes of which we are indebted to Mr. Hugh Bennett, clinical clerk to the hospital. In this instance, the duration of the disease was three years and a half, and the extreme whiteness of the skin resembled the anæmia of females who have lost much blood. The anæmic bruit was also present.

William B——, aged twenty-seven years, was admitted, on June 8th last, into Job ward, Guy's Hospital, under the care of Dr. Pavy. He was a single man, by occupation a gunmaker, and residing in Fleet street; states that his health has been good up to three years and a half ago, excepting having had an attack of inflammation of the bowels fifteen years since, and three attacks of gonorrhœa four years ago; he had a chancre on penis, no sore throat, no bubo, nor eruption; six months afterwards had enlarged glands in the left groin, which have increased in size ever since; he was never of dissipated habits, and always kept good hours. His parents and brothers are healthy; no history of scrofula in the family. Three years and a half ago he noticed a small lump in the left groin, accompanied with a slight pain. It was the pain, and not the lump, which chiefly attracted his attention. The pain he described as dull and aching, descending the left thigh as low down as the knee, the thigh being at the same time slightly swollen, and also ascending obliquely backwards towards the small of his back. Twelve months ago he was an inmate of St. George's Hospital, under the care of Mr. Hawkins, who treated him with iodide of potassium and cod-liver oil internally, and tincture of iodine locally. He was presented by Mr. Hawkins, at the expiration of eight months, slightly relieved. He resumed his original occupation, and followed it for a short time, until he became so weak that he was compelled to give it up.

The patient is a man of middle stature, light complexion, gray eyes, and light hair; presenting all the appearances of having lost an abundance of blood—suffice it to say, however, that he has not lost any; skin of his body generally extremely white, hot, and pungent; conjunctivæ watery. Chest well formed, mobile during respiration, and resonant on percussion; equally resonant posteriorly. Lungs healthy. On listening to the sounds of the heart, there could be

heard indistinctly a systolic bruit in the course of the aorta ("anæmic bruit diagnosed"). He never had rheumatism or pain in his limbs. His voice is strong and clear; tongue moist and clean; has evidently an enlarged spleen bulging out of the left hypochondriac region; it can be distinctly felt through the abdominal walls; has enlarged glands in the left groin, about the size of a goose's egg; no other glands perceptibly enlarged; has general anasarca; skin pits on pressure in every part of the body and extremities; urine healthy, specific gravity 1017; bowels open; motions of a clay colour, "pale."

Mr. Stocker, the apothecary, saw the patient on the 8th of June, and ordered the following medicine: two grains of iodide of potassium, in an ounce of julep of ammonia, three times a day.

June 9. He had a good night. His blood was examined microscopically this morning, and was found to contain an excess of white corpuscles, "comparatively speaking;" but, in reality, there seemed to be a deficiency of the red corpuscles, rather than an excess of the white.

11*th*. Dr. Pavy prescribed five grains of the citrate of iron, with quinine, thrice a day.

13*th*. Has a severe headache this morning, and a troublesome cough is coming on, without any expectoration. To have five grains of extract of conium night and morning; also, five ounces of wine daily.

16*th*. Feels better since he has had the wine; cough much about the same. Ordered, lactate of iron, five grains; iodide of potassium, two grains; syrup of poppies, half a drachm; water, an ounce: three times a day.

18*th*. Expresses himself as being better; lower extremities still very œdematous; coughs a good deal at night.

July 4. Thirst excessive; appetite lost; expectoration more abundant, of a bluish gray, slightly frothy character, and strongly adherent to the bottom of the utensil.

8*th*. The patient evidently seems much worse; lies prostrate in bed; is not able to sit up for five minutes together; mouth and tongue very dry, the latter being brown in the centre, and white along the margins.

9*th*. Had a very restless night; respiration became hurried; pulse quick and feeble; eyes turned upwards; mouth wide open, and dry. Ordered, eight ounces of wine; ammonia and serpentaria.

10*th*. Unconscious; lies on his back, with his head thrown backwards; pulse rapid, and extremely feeble.

11*th*. Expired at 6 A. M. Died quietly.

Post-mortem examination thirty-three hours afterwards.—On opening the thoracic cavity, it was found to contain a larger quantity of fluid than is usually met with in health, and an excess of fluid was also found in the pericardium. Lungs free from adhesions; patches of softening were here and there found on cutting into them. Liver, kidneys, and heart healthy; the latter contained no clot, except a very small one in the left ventricle; blood being remarkably thin, like port wine and water mixed. Spleen enlarged; weighed twenty-four ounces and a half; full of white tubercles. Lumbar glands greatly enlarged; inguinal glands also enlarged.—*Lancet*, Aug. 27, 1859.

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17. *Defective Assimilation in Infants—its Prevention and Treatment.*—Dr. Routh read a paper on this subject before the Medical Society of London. The object of the paper was to show that most of the mortality of infants was due to defective assimilation. Defective assimilation was almost always the result of want of breast milk and the use of injudicious food; the disease was most effectively prevented by supplying this milk. Dr. Routh then detailed the result of breast milk exclusively given, artificial food without breast milk and with it, or the development and mortality of children, from tables of Messrs. Merei and Whitehead; from which he showed that in proportion as breast milk predominated, in proportion was good development observed, and *vice versa*. He then showed that the most frequent diseases amongst children were abdominal diseases, occurring in the proportion of 23.4 per cent.; developmental diseases in that of 8.8 per cent. of all cases; rachitic diseases constituting 3.2 per cent.; atrophy or marasmus, 5.2 per cent. He believed, however, that all these were

produced by defective assimilation, the former in most cases being sequelæ of it; atrophy or marasmus being only the more marked and characteristic stage.

Dr. Routh then described the disease as consisting of three stages: first, or premonitory, in which peevishness, some loss of flesh, occasional attacks of indigestion, acid eructations, &c., were most prevalent; in the second stage, *emaciation* was more marked, eyes became unusually bright, much loss of digestive power, sometimes with diarrhœa and lientery; third, or exhaustive stage, generally attended with diarrhœa, aphthæ, frightful emaciation, complete loss of digestion, &c. Sometimes the disease from the second stage passed on to tuberculosis, rachitism, and most developmental disorders, and not to the third stage.

Causes.—The predisposing causes were—hereditary tubercular habit, and exanthemata; exciting causes—bad air, want of cleanliness, injudicious food, and especially an atmosphere contaminated by too many children being congregated together.

Post-mortem appearances.—Three kinds: emaciation very great, loss of adipose, cellular, and muscular tissue, in all varieties; but in one, where diarrhœa has been present, red patches, or aphthæ over the alimentary mucous membrane, these aphthæ often containing the oïdium albicans. In other cases, also with diarrhœa, the mucous membrane exuding a reddish coloured mucus, intensely acid. In others, without diarrhœa or with it, Peyer's glands projecting, and enlarged in patches, as in Asiatic cholera. In all, undigested matter in canal, with very fetid fecal matters.

The disease seems to be gradual, passing on to entire loss of *primary* assimilation; the secondary still persisting, although inactive from want of assimilable matters to take up. Albuminous, starchy, and oily matters were not digested.

The *treatment* consists in supplying fatty acids and already artificially digested animal and occasionally vegetable substances, especially human milk. If this could not be sucked, it should be collected in a cup and given by the spoon. Dr. Routh strongly animadverted here upon the absurd dogma, that it is wrong to mix human and cow's milk. He, on the contrary, believed the plan not only safe, but the very best practice in many cases, and the only means of saving an infant's life. Simple juice of meat, and this with vegeto-animal food, he had found most useful in fulfilling these indications. The remedies were of two kinds: 1st. Those calculated to increase cell growth and development. Phosphate of soda, producing an emulsion with fats, thus allowing of their assimilation; chloride of potassium, to dissolve carbonate of lime; phosphate of lime, to enable blood to take up more carbonic acid, and thus hold in solution more carbonate of lime (these substances severally strengthening muscular and bony structure); lime-water, to provide lime to blood. 2d. These last also acted as some of the remedies calculated to allay local irritation of the alimentary canal. Carminatives were useful, such as dill, but especially cinnamon-powder, to correct flatus and to check diarrhœa. Anodynes were also (however objected to generally) strongly recommended by the author. For the diarrhœa, when present, nitrate of silver and sulphate of copper were the best remedies. Wine was also found very serviceable, even if given in large quantities. These remedies, however, it must be confessed, proved in most cases of no avail in the third stage, which was, he might say, almost incurable; but they acted very effectively in the second and first stages.—*Lancet*, June 18, 1859.

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18. *Traumatic Diabetes.*—Dr. PLAGGE reports a case brought on in a young man by a blow on the occiput, which, besides a swelling, seemed to produce no effect. In two or three days, however, the youth was seized with amblyopia, thirst, and craving for food, while he passed a large quantity of urine which yielded much sugar. There was no uneasiness about the liver nor jaundice. Tannin and opium together, with flesh diet, were prescribed during a week, with little effect, three or four quarts of urine being passed daily. Under the use of bicarb. of soda, with flesh diet, however, the sugar gradually disappeared from the urine, although this fluid continued to be passed in too great abundance, as simple polyuria, for two months longer.—*Med. Times and Gaz.*, June 11, 1859, from *Virchow Archiv.* B. xiii.

19. *Employment of Water in Auscultation.*—Dr. S. Scott Alison, when lately engaged in performing experiments upon the propagation of sound, ascertained that water placed between the aperture of a hearing-tube and a solid-sounding body, gave an increase to the sound conveyed to the ear without it; and that the amount of increase of sound thus procured by the interposition of water is so considerable as to very materially add to the value of hearing-tubes, when employed upon the sounds of solid bodies. The quantity of water which will give an increase of sound need not be more than a fine film under the hearing-tube, and extensive enough to connect the entire circumference of the aperture with the solid-sounding body.

The increase of sound procured by the interposition of water varies much with the material of which the hearing-tube is formed. Wooden and metallic plate-tubes, such as are firm and non-flexible, receive no advantage from water; tubes such as the flexible stethoscope and ordinary hearing or speaking tubes acquire a material reinforcement from water, while tubes made of India-rubber gain a very great advantage from the interposition of this medium. It may be stated, as a general rule, that the more a hearing-tube becomes a mere air instrument, and departs from the character of a solid conducting instrument, the more water adds to its acoustic value. When a tube, by means of firm solid walls, becomes more of a solid conductor of sound, water becomes less useful, till at last, as in the case of a wooden stethoscope with only a fine bore, it diminishes sound, and acts as a damper.

The construction of hearing-tubes materially affects the results obtained from the employment of water. A tube which is provided with an ear-piece that enters the meatus externus serves to show the augmenting property of water more than one having a circular disk to cover the external ear. A cup or expanded extremity, for the collection of sound, serves likewise to increase the reinforcing power of water. The contraction of the tube beyond the cup to the uniform size of the external meatus favours the same result.

Whatever interferes with the free undulations of the air contained in the tube reduces the property of water under consideration. If a piece of membrane of the greatest tenuity be stretched across the tube or bore of the instrument, between the cup or aperture and the aural extremity, the result is materially reduced.

If a tube be converted into a solid body by closing up the hollow part, water far from increasing the sound heard, materially reduces it. A solid rod of wood, such as a ruler or a solid stethoscope, is deteriorated by water employed in the manner under consideration.

The evenness or unevenness of the surface of sounding bodies materially affects the result obtainable from water when hearing-tubes are employed. The augmentation of sound is much greater when the surface is rough and uneven, and thus prevents the exact fitting of the cup of the hearing-tube upon it.

The consistence of solid bodies naturally affects the result of the employment of water. The effect is greater in the case of hard resisting bodies, such as wood or stone, than of softer bodies, such as leather.

The freedom or constrained position of the cup or the tube, in respect of capability of vibrating, very materially influences the action of water. If the cup be held firmly by the fingers the result is greatly deteriorated. If the cup be pressed to the bottom of a vessel containing water, the sound heard is greatly less when it is kept free in media aqua.

In order that water shall augment sound in the manner under consideration, viz., from solid bodies through hearing-tubes, it is necessary that the water come in immediate contact with the aperture of the tube, or be separated from it only by some thin movable or vibrating body, such as thin India-rubber, gutta-percha, or other membrane, or other solid body which, in reference to the strength of the sound, shall be small and vibratory. A thin membrane offers little impediment in the case even of a fine delicate sound, but a thin layer of wood, the one-fiftieth part of an inch in thickness, will materially counteract the augmenting power of water in the case of a fine sound, such as that of a watch or even of a tuning-fork. The more the intervening solid body is indisposed to vibrate, the more it interferes with the sound-augmenting property of water. For a layer of

wood one-twelfth of an inch thick, placed between the water and the hearing-tube, to admit of the advantage of water being even in some degree manifested, the sound proceeding from the solid body beyond the water must be very loud, and capable of violently agitating the water, and the wood placed between it and the hearing-tube. Layers of India-rubber offer much less impediment to the augmenting power of water; these, in fact, act as membranes. Thin membranes offer no sensible impediment whatever.

"If we desire," says Dr. A., "to employ water as an agent in auscultation and in aid of hearing-tubes, difficulties at once present themselves. To apply water to the chest is easy enough; but it is not so easy to retain it there in a suitable manner. The application of water may be unpleasant to the patient, and by wetting his clothes may give rise to much annoyance and inconvenience. The idea occurred to me that if I could confine water in some material that would not interfere with its sound-intensifying power, a material advantage would be gained, and we should have a convenient mode of reinforcing hearing-tubes. In the preceding part of this paper it was stated that a thin membrane offers no sensible impediment in the way of water intensifying sound, although thick and non-elastic or non-vibrating bodies did, and taking advantage of this fact, I made a water-proof bag of India-rubber to contain water. The India-rubber membrane is so thin as to offer little or no resistance to the undulations of water. The bag is about the size of a large watch, and is sufficient to receive the extremity of an ordinary flexible stethoscope, or to form a medium of connection between the external ear and a solid sounding body such as the human chest. The thickness of the bag is not above the third of an inch. Nothing is gained by greater thickness, and the advantages of sound having to travel only a short way, and also of only a very little weight pressing upon the sounding body, are secured. The sonorous pulses, so to speak, are readily taken up from the solid body or the chest, and are conveyed through the water, and membrane on either side, and reach the edge of the aperture of the hearing-tube and the contained air, whether the instrument be the flexible stethoscope, the human ear, or any other hearing-tube. This instrument possesses valuable advantages, and I have therefore ventured to give it a name, that of the hydrophone. It fits admirably and exactly upon the part of the chest to which it is applied, however uneven and irregular, whether this be a projecting rib or a deeply sunk intercostal space, a broad level surface or a narrow depression, the clavicle or spine of the scapula. By its other side the hydrophone fits as exactly to the aperture of the hearing-tube or to the exterior of the human ear. Every part of the solid body covered by the hydrophone contributes its quota of sound. The fitting of the instrument to the hearing-tube prevents the escape of sound from the contained air to the external atmosphere, and by this means resonance of the contained air, and of the containing tube is greatly promoted, with the result of a greatly augmented sound. The edge of the hearing-tube sits so easily, and with so little resistance from the water-bag, or hydrophone, that the vibrations which are communicated to it are readily reciprocated, and find none or little of that resistance so fatal to its vibrations when pressed upon a solid body.[1]

"The hydrophone may be employed either in aid of the stethoscope, or as a distinct acoustic instrument by itself. In the case of wooden stethoscopes which are solid, applied to the distal aperture, it is injurious by damping sound; in the case of the hollow wooden stethoscope it is of no material value, for water is an indifferent conductor of sound from a solid body to another solid body, and it may be stated that the hollow wooden stethoscope is more a solid than an air instrument. What it gains as an air instrument from the water, is lost as a

[1] A fact which I have very lately ascertained appears to me well worthy of being here recorded. It bears directly upon the importance of perfect freedom of the cup of flexible stethoscopes. A cup held rather firmly upon a piece of wood upon which a tuning-fork is placed gives a fainter auditory sensation than when held loose, but the auditory sensation is further and very materially reduced, if instead of being held firm, the cup be glued to the piece of wood. Here we have perfect continuity but reduced sound. The explanation is found in the reduced vibration.

solid instrument. In fact, more may be lost in the one way than is gained in the other.

"It is in the case of the flexible stethoscope that the hydrophone forms a material aid in auscultation by hearing-tubes. The flexible stethoscope is here meant to signify all stethoscopes into whose construction flexible tubes enter, either forming the whole tube part of the instrument, as in the ordinary flexible stethoscope, or part only, as in Camman's double stethoscope, or my own differential stethoscope. These instruments are essentially air instruments, and I am glad to say that Camman designated his instrument such when he first made it known; for this corresponds with my own investigations. In the case of all these instruments the intensification of sound by the hydrophone is so material, that I have no hesitation in saying that without its employment their resources are by no means fully made available. To have the full benefit of any one of these instruments the hydrophone is essential. Respiratory sounds, healthy and morbid, which are audible with the simple flexible stethoscope, are made more audible when the hydrophone is placed under it. Rhonchi and moist crepitation are strikingly augmented. Vocal resonance, solid and cavernous, dry and moist, are in a marked manner amplified. Pectoriloquy accompanied with much vibration of the chest, is increased in a very striking manner. Murmurs of the heart, usually heard in a mitigated form only by flexible stethoscopes—at least in my experience—are conveyed to the ear so as to produce a very distinct and defined sensation. To sum up, it appears to me that flexible stethoscopes, however ingeniously constructed with twisted wire and other contrivances, are, compared with the simple wooden stethoscope, essentially deficient as sound-conveying instruments, some few sounds excepted; but that the hydrophone greatly counteracts this deficiency and brings them up much more to the rank of Laennec's stethoscope. But the inquiry may be made, What good purpose can the hydrophone subserve under such circumstances, if it can only bring a second-rate instrument nearly up to the position of another? The answer is this, There are situations and occasions which require the flexible instruments, as is well known, and it is certainly important to render them, defective though they are, as useful acoustic instruments as is possible. It may be possible to place the cup of a flexible tube with a hydrophone under it, where it would be difficult or impossible to employ a wooden stethoscope. In auscultating the sounds of the gravid uterus, or of the fœtus in process of birth, a flexible stethoscope with a hydrophone might possibly afford evidence that would under certain circumstances be very important.

"Pulsating tumours of the chest, too tender to admit of the pressure of the wooden stethoscope, or even of the naked cup of the flexible stethoscope, or upon which it might be dangerous or hazardous to exercise pressure, are well auscultated by means of the flexible stethoscope, provided either with a flat ear-piece or a tubular ear-piece to enter the meatus, having the hydrophone placed under it and upon the morbid part. The hydrophone takes up sound from every part; however uneven it may be, it forms a soft water cushion, and it serves, at the same time, greatly to reinforce sound procured without it. In practice I have on many occasions, with the aid of the hydrophone, distinctly heard murmurs of the heart, of the existence of which I had been in doubt when simply employing the flexible stethoscope.

"I have observed that when the flexible stethoscope is employed with the clothes of the patient intervening, as is unavoidable under some circumstances, as, for instance, when time does not admit of undressing, or when the patient would suffer by exposure to cold, the impression made upon the ear by lung and heart sounds is greatly enfeebled and is very unsatisfactory. This evil attendant upon the employment of the flexible stethoscope, including Camman's double stethoscope, and my own differential stethoscope, is obviated, I may say altogether, by placing the hydrophone under the stethoscope. The reinforcement of the sounds is so great as to be quite surprising, as well as very useful. An examination that would be worthless is by the use of the hydrophone rendered satisfactory. This result is obtained partly by a gentle yet efficient pressure exerted upon the clothes, compressing them into less density by excluding layers of air. But a great portion of the result is due to a more complete closure of

the aperture of the instrument, attained by a surface of water covered by thin membrane, than can be secured by one of porous and comparatively uneven cloth, etc.

"In the examination of children, the employment of the hydrophone, together with the double or the differential stethoscope, is most satisfactory, and is well deserving of notice here. I believe it to be a very great improvement upon the use of the wooden stethoscope, and well worthy of the adoption of the profession in dealing with children. The intensity of sound procured is nearly the same as in the case of wooden instruments. The cup of the stethoscope fits perfectly upon the water, which it can seldom do upon the sharply-curved chest of infants, and thus much economizing of sound is secured. For the same reasons no irregular pressure is endured. The child suffers no pain, and is spared one great source of restlessness and vociferation. Lastly, the employment of the hydrophone and a flexible stethoscope causes no alarm, as in the case of the wooden instrument, and is very generally the source of much interest and even amusement to the child, who consequently remains in a state of quietude very favourable for the examination of the auscultator. I constantly examine children with the utmost ease and deliberation in this way, whom I should otherwise have to send away after fruitless efforts at auscultation.

"The same method of examination, viz., by the hydrophone and the flexible stethoscope, including Camman's double stethoscope and my differential stethoscope, is very valuable in the case of wasted patients. The employment of the wooden stethoscope with such persons is frequently very painful, and is positively cruel. Moreover, as the aperture fits very badly, it is highly unfavourable for the propagation of sound to the ear. Now, the water-pad, or hydrophone, sinks into the hollowed intercostal spaces, and comes into complete contact with the entire circumference of the mouth of the stethoscope, at once collecting more sound, preventing its escape, and obviating the occurrence of painful pressure.

"Upon blistered surfaces and parts tender either from internal disease or from external applications, this mode of auscultation is much superior to that by the wooden stethoscope. When an examination by the latter instrument is positively refused, one by the method under consideration is at once permitted as being altogether painless. Many patients, particularly females with tender and wasted chests, have expressed to me their satisfaction with, and surprise at, this painless mode of examination.

"A very slight augmentation of sound, in the case of some sounds, is procured by placing the hydrophone on the proximal or aural extremity of the ordinary wooden stethoscope, but it is scarcely available in practice.

"The bag of water, or hydrophone as I have ventured to call it, is of service not only in the case of artificial hearing-tubes, but in that of the natural hearing-tube, viz., the ear. Applied to the naked chest it forms a stethoscope not materially inferior to the best wooden stethoscope, length excepted. When the part auscultated is very uneven or much curved, by fitting well, it excels the wooden instrument in an acoustic point of view. By fitting well also upon the external ear of the auscultator, and by closing thoroughly the meatus externus, great acoustic advantages are obtained. The sonorous undulations are freely conveyed to every part of the external ear, the air in the meatus comes in immediate contact with the instrument without the possibility of any sonorous undulations escaping. The sonorous undulations of the walls of the tube and those of the inclosed air react upon each other. The water again reciprocates as a sounding-board, and the general resonance is greatly promoted by the thorough closure of the tube. The closure of the meatus is greatly more complete in the case of the water-bag than can be procured by any ordinary wooden disk. The complete closing of the ear, it may be remarked, is useful chiefly by promoting resonance, and not, as has been erroneously taught by some eminent stethoscopists, by excluding other sounds.

"The hydrophone forms a great aid to the external ear when the patient is to be examined with his clothes still upon him. As a general rule, good stethoscopists strip their patients for examination, but it may be sometimes desirable to examine through the clothes, as in probably trivial cases, when there is little

time, when the patient suffers from cold, or when the examination is only a supplementary one, or a rough observation will suffice. In such an examination the hydrophone proves of great value: a sound which is very indistinct to the ear placed upon the clothes, becomes full and distinct when the hydrophone is employed. Voice sounds, heart sounds, and rhonchi are greatly improved. Employed in this manner, I am inclined to think the hydrophone is equal, if not superior, to the wooden stethoscope.

"The water instrument has this material advantage, that it is very readily moved from one place to another—*i. e.* from one part of the chest to another. For example, in examining the back, the whole of the surface may be, as it were, run over without once lifting the head, the hydrophone being shifted with the ear upon it from place to place.

"In respect of delicacy, the hydrophone is not without some value: for, in the case of females, the interposition of this instrument meets the objection to the immediate contact of the ear of the auscultator with the chest of the patient. When the application of the hydrophone gives annoyance from its coldness, this evil may be readily obviated by placing the instrument in warm water, or by otherwise warming it. Minor advantages of this instrument are its portability and cleanliness."—*Med. Times and Gaz.*, July 2 and 9, 1859.

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20. *Idiosyncrasies.*—Mr. T. W. Nunn, Assistant Surgeon to Middlesex Hospital, relates (*British Medical Journal*, June 11th, 1859) the following examples of this:—

Case I. *Poisoning by Rice.*—J. M., an occasional patient, cannot eat rice in any shape without extreme distress. From the description given of his symptoms, I believe spasmodic asthma to be the cause of his discomfort. On one occasion, when at a dinner party, he felt the symptoms of rice-poisoning come on, and was, as usual, obliged to retire from the table, although he had not partaken of any dish ostensibly containing rice. It appeared, on investigation, that some white soup, with which he had commenced his dinner, had been thickened with ground rice.

Case II. *Rice-poisoning.*—A gentleman who, as in the preceding case, could not eat rice "without being suffocated," took luncheon with a friend in chambers. The fare was simple—bread, cheese, and *bottled* beer. On the usual symptoms of rice-poisoning seizing him, he informed his friend of his peculiarity of constitution. The symptoms were explained by the circumstance of a few grains of rice having been put into each bottle of beer, for the purpose of exciting a secondary fermentation.

Case III.—A gentleman, some time since under my treatment for stricture, informed me that he could not eat figs without experiencing a most unpleasant formication of the palate and fauces; and that the fine dust from split peas produced the same sensation, accompanied by a running at the nose. The father of this gentleman suffers from hay-fever at certain seasons.

Case IV.—Mr. P., himself a gentleman of a peculiarly nervous temperament, states that his father cannot endure the sensation produced by handling a russet apple. He also communicated to me

Case V.—That of Mr. T., who cannot remain in a room in which there is a cooked hare, on account of the peculiar effect produced on his system.

Case VI.—Miss ——, after eating egg, suffers from swelling of the tongue and throat, accompanied by "alarming illness."

Case VII.—Miss ——. In this case, somewhat similar effects follow the taking of honey of any kind, and especially honey-comb, into the stomach; viz., swelling of the tongue, frothing of the mouth, and blueness of the fingers.

Case VIII.—The following is an extract from a note received by me from a lady, who says: "I had on three mustard plasters—one on the throat, one on the back of the neck, and another under the left shoulder. They remained on half an hour. Cotton wool was applied on their removal. About thirty hours afterwards, a painful stinging sensation commenced in the back of the neck, followed by violent twitching of the muscles of the face, arms, and legs, which continued in regular succession through the whole night. It yielded, after about twelve hours, to hot fomentations of poppy-heads applied to the back of the

neck." It cannot be ascertained that any medicine containing strychnia was taken.

CASE IX.—A gentleman, a member of the medical profession, with whom I am well acquainted, suffers from nettle-rash after eating veal. Veal has the reputation of being particularly indigestible. The above instance of the production of urticaria from its use is, doubtless, not an uncommon one.

CASE X.—I have been informed of a lady who cannot remain in a room where there is a cat. Although the cat may be concealed, the lady's peculiar sensations immediately declare to her the presence of the animal.

CASE XI.—A patient under my care, since dead of cancer, was invariably thrown into a state of nervous excitement by the exhibition of the compound infusion of orange-peel.

CASE XII.—A personal friend of my own suffered from erythema nodosum after eating shrimps, although these were perfectly fresh. I believe shell-fish generally is particularly liable to excite unpleasant consequences.

SURGICAL PATHOLOGY AND THERAPEUTICS, AND OPERATIVE SURGERY.

21. *Tracheotomy in Croup.*—Dr. CONWAY EVANS, Assistant Physician to King's College Hospital, read a paper on this subject before the Royal Medical and Chirurgical Society. The author commenced by remarking upon the frequency and fatality of croup as a disease of early life, in illustration of which he observed that out of every thousand deaths of children between the ages of one and ten years which occurred in England and Wales during the year 1856, sixty were due to this malady. He then proceeded to examine into the rate of mortality from croup, and pointed out the very slight measure of success which has hitherto attended the methods of treatment usually employed in this disease. The following cases—four of croup, and two of diphtheria (?)—in which tracheotomy was performed, were then narrated in detail:—

CASE 1.—A boy, aged nine years. Attacked with croup of slow accession; temporary amendment in the symptoms, followed by threatening suffocation; tracheotomy; death four hours after the operation; existence of croupous exudation down to the second and third subdivisions of the bronchi.

CASE 2.—A girl, aged three years. Croup, treated by leeches, counter-irritation, tartar emetic, and calomel; tracheotomy on the fifth day, asphyxia being so complete as to render artificial respiration necessary; ejection of false membrane from trachea, and likewise two casts of small bronchial tubes; after treatment of a freely supporting character; recovery perfect.

CASE 3.—A boy, aged two years. Croup, between two and three days, treated with emetics; tracheotomy on the third day, suffocation being nearly complete; death during the operation; the croupous exudation found after death to extend down to the first subdivision of the bronchi.

CASE 4.—A boy, aged two years and a half. Croup, treated by tartar emetic; suffocation imminent on the fourth day, from the accession of the croupous breathing; tracheotomy; death from exhaustion sixty-five hours after the operation; false membrane found after death to extend down to the fourth subdivisions of the bronchi.

CASE 5.—A boy, aged five years. Diphtheria (?), coming on slowly and insidiously; breathing croupous on the seventh day; treated by emetics, counter-irritation, calomel, and compound antimonial powder; suffocation imminent on the eighth day; tracheotomy, followed by supporting treatment; ejection of a piece of false membrane; sudden accession of severe diarrhœa about thirty-six hours after the operation, and death from exhaustion. No post-mortem examination.

CASE 6.—A boy, aged ten years. Diphtheria, coming on very insidiously during nearly a month; treated by salines, and the application of a solution of

nitrate of silver to the throat; supervention of croupous symptoms, treated by counter-irritation, leeches, antimony, calomel, and chlorate of potash; asphyxia impending; tracheotomy, and stimulating after-treatment; death, apparently from syncope, about twenty-six hours after the operation. After death, a thick false membrane, separable from the subjacent mucous membrane only with considerable force, was found to line the larynx and trachea, and to extend to the bifurcation of the latter; it probably, indeed, passed down into the lungs, but an examination of these organs was not permitted.

Observing that, as in a large proportion of the fatal cases of croup the disease destroys life by asphyxia, the author proceeds to inquire into the reasons why tracheotomy is so rarely resorted to for the relief of this malady in Great Britain, and traces this mainly to the influence of the strong opinions against the operation which have from time to time been pronounced by many great authorities, both British and American, whose views in reference to this point are cited. These opinions the author believes have no valid foundation, and are unworthy of the confidence generally placed in them; and to this conclusion he is led by four classes of considerations, which are examined in detail. These are—1st, the high rate of mortality from croup, both with and without treatment; 2d, the immediate cause of death in a large majority of the fatal cases of the disease—namely, asphyxia; 3d, the recorded cases of croup in which tracheotomy has been resorted to in this country when the patient has been all but suffocated, and in which complete recovery has followed the operation; and 4th, the great success which has attended the performance of tracheotomy in croup in France, in which country it has been extensively practised. If to each of these considerations its fair value be assigned, there can scarcely be any other conclusion but that it is incumbent upon the practitioner to give a fair trial to any method of treatment in croup which promises for its results a lower rate of mortality than obtains under the usual plans, and especially to tracheotomy.

The objects to be gained by the performance of tracheotomy in croup are next pointed out, stress being laid upon the fact that the operation affords time for the disease to run its course (which would frequently not involve the destruction of life, except for the occurrence of asphyxia, which ought really to be regarded as a circumstance in the disease in great measure accidental), and for the administration of such remedies as may be deemed advisable. The physiological effects of the free admission of air into the lungs through an opening in the trachea, in a child undergoing gradual suffocation from croup, are then considered; and the immediate cause of death in those cases in which life terminates by asphyxia is also examined: the practical conclusion arrived at being, that while the symptoms of suffocation may be relieved in almost all cases by the late performance of tracheotomy, they may be prevented in many by recourse being had to that proceeding early in the course of the malady.

The principal objections which have been urged against the performance of tracheotomy in croup are then considered in the following order. Tracheotomy in croup has been objected to—

a. As unnecessary when there is spasmodic closure of the larynx, and as useless when false membrane exists in the windpipe without such spasmodic closure.

b. As useless when the false membrane extends below the point at which the opening into the trachea would be made, and especially when the croupous exudation passes down into the bronchial tubes.

c. As tending in itself to induce bronchitis and pneumonia—diseases which in themselves involve considerable risk to life.

d. As having been actually attended with so little success as practically to render the operation unjustifiable.

e. As very difficult of performance, and as involving in itself great danger to life.

The real value of each of these objections is then carefully and fully examined in the order above given, the answer to the first objection being illustrated by the following case:—

Case 7.—A girl, aged three years; croup treated by the warm bath and by tartar emetic, in spite of which the case progressed from bad to worse until the third day, when, while symptoms of asphyxia were being gradually developed,

and signs of exhaustion were becoming well marked, the patient suddenly fell back in bed and died, with scarcely a struggle. After death, but before the post-mortem examination, tracheotomy was performed. A mass of false membrane was found, almost filling the larynx, and quite occluding the rima, and extending downwards to the third ring of the trachea; but the *lowest* part of the croupous exudation was just *above* the top of the tracheotomy incision. No false membrane existed in any other part of the trachea.

The results of tracheotomy for the removal of foreign bodies from the air-passages are then investigated, as well as those of the performance of this operation for the relief of other maladies than croup. But as the statistical method of examining this subject is believed by the author to be productive of an impression upon the mind of the practical physician by no means so lasting as a narrative of the results of clinical observation, the following cases in which tracheotomy was performed for the relief of other diseases than croup are given in detail:—

CASE 8.—A man, aged forty-three years; came under observation when nearly exhausted from distressed breathing, dependent on syphilitic disease of larynx (probably ulcerative); tracheotomy, followed by a supporting plan of treatment; recovery; but, though able to return to his occupation (a laborious one), unable to breathe without the tracheal tube eight months after the operation.

CASE 9.—A gentleman, aged seventy-two years; nearly asphyxiated from spasmodic closure of the larynx, associated with some disease of that organ (probably of a malignant character); tracheotomy; recovery as regards breathing; but, though living in a state of comparative comfort, unable to breathe without the tube nine months after the operation.

CASE 10.—A man, aged thirty-six years; suffocation impending from œdema of glottis; tracheotomy, followed by a highly supporting plan of treatment; recovery complete and rapid; voice also perfectly restored.

CASE 11.—A girl, aged fifteen years; nearly suffocated from œdema of the larynx, supervening upon chronic disease of that organ associated with "lupus non exedens" of face, lip, and thigh; tracheotomy; recovery, but inability to breathe on the withdrawal of the tracheal tube two months after the operation.

CASE 12.—A lady, aged twenty-eight years; œdema of glottis, supervening upon tubercular disease of the larynx; suffocation imminent; tracheotomy; temporary recovery, the patient continuing to live in a state of comparative ease for five months after the operation. when death resulted from exhaustion consequent on the full development of the pulmonary phthisis.

CASE 13.—A woman, aged twenty-three years; œdema of larynx associated with syphilitic disease of that organ; treated by calomel and opium, in spite of which suffocation became imminent; tracheotomy, followed by supporting treatment; ejection of a complete cast of bronchial ramifications of one lung; recovery complete, except as regards voice.

CASE 14.—A girl, aged nineteen years; sloughing of the soft palate and the back of the pharynx, of syphilitic origin; inability to swallow; supervention of œdema of glottis, and threatening suffocation; tracheotomy, followed by supporting treatment, the patient being fed for several weeks by the stomach tube; recovery complete.

CASE 15.—A boy, aged three years and a half; foreign body in windpipe; tracheotomy, but no foreign body discovered; incisions in trachea enlarged, and windpipe freely examined on several occasions, but without success; eventually, incisions made, not only through several rings of trachea, but also upwards through both the cricoid and the thyroid cartilages, so that a finger could be readily passed from the trachea into the mouth, but still without the detection of any foreign body; ultimate recovery complete, and voice regained.

The conclusion deduced from all these considerations and facts is, that tracheotomy, though frequently a difficult operation, is by no means so dangerous a proceeding as is commonly supposed.

An inquiry is then instituted into the causes of the want of success which has attended the performance of tracheotomy in croup in this country, and this is attributed chiefly to the following circumstances—namely:—

1st. To the fact that tracheotomy has been very rarely indeed resorted to in

croup in Great Britain except as a last resource, when other methods of treatment have been tried and found unavailing, and when the patient has become nearly asphyxiated.

2d. To the fact that the treatment employed prior to the performance of the operation has almost always been of a more or less depressing kind, usually consisting in the exhibition of tartar emetic, ipecacuanha, calomel, the abstraction of blood, the use of the warm bath, &c.

3d. To the fact that the after-treatment has not generally been of that supporting character which nature requires for the due upholding of the patient's strength until the phenomena of croup shall have had time to run their course; and to the difficulty experienced in commanding constant attention in the way of nursing and watching for some days after the performance of the operation.

The author then strongly urges the propriety of having recourse to tracheotomy for the relief of croup early in the course of that disease, and immediately that the existence of false membrane in the windpipe can be satisfactorily determined, and emetics have been fairly tried; and for these reasons:—

a. Because tracheotomy tends to prevent the mode of death by which nearly all fatal cases of croup, in which the operation is not resorted to, terminate—namely, death by asphyxia.

b. Because tracheotomy facilitates the ejection and removal of portions of false membrane from the windpipe.

c. Because tracheotomy tends to prevent the exhaustion due to the extraordinary efforts of breathing almost always made by the patient in this malady.

d. Because tracheotomy, by prolonging life, affords time both for the phenomena of the disease to run their course, and for the administration of remedies and of means of support to an exhausted system.

e. Because tracheotomy facilitates the employment of topical applications to the interior of the windpipe, upon which great reliance is placed by some practitioners.

f. Because the early performance of tracheotomy in France has been attended with results which are admitted, even by the opponents of the operation, to have been far more favourable than when recourse has been had to this procedure as an ultimate expedient.

The physiological and pathological differences between the condition of a child merely asphyxiated by croup, and that of a man half strangled by some mechanical cause, are then pointed out, and the necessity which exists in the former case for the free employment of a supporting plan of treatment is clearly proved.

The cause of death in those cases of croup in which a fatal termination ensues, notwithstanding the performance of tracheotomy, is next examined, and this is shown to depend upon one or more of the following conditions:—

1. On some accidental circumstance connected with the operation, such as hemorrhage into the windpipe, obstruction or undue narrowness of the tube, &c.

2. On asphyxia dependent on the extension of the croupous exudation into the lungs, or on the reformation of the false membrane after its having been once ejected.

3. On complicating diseases (either connected with the operation, or without any reference to it) arising in the course of the croup, such as bronchitis or pneumonia.

4. On exhaustion—death by asthenia.

The author believes that croup, when it proves fatal, always tends to destroy life by exhaustion, and that this would be its ordinary mode of termination were it not that the part of the body in which the most striking alterations of structure induced by malady occur, is one in which the existence of such a mechanical obstruction as is presented by the croupous exudation tends, as well in itself as in the spasmodic closure of the larynx, with which it is often associated, to destroy life by suffocation before the disease has had time, as it were, to run its full course, and produce death by asthenia. And he, therefore, strongly advocates the propriety of adopting a supporting plan of treatment in this malady, both before and after the operation, but especially after its performance. The value of alcohol, as a remedial agent in the treatment of disease, is then exam-

ined, and the method in which it should be given—viz., in small doses at short, but regular, intervals—is pointed out. Alcohol should be regarded, as has been remarked by Dr. Todd, not as a specific remedy, but simply as a kind of food. It is really a hydrocarbon, very easy of digestion, possessing certain properties of enabling the body temporarily to withstand exhausting influences, and capable, by its undergoing oxidation in the system, of maintaining the animal temperature, and of preventing waste of tissue. The *modus operandi* of the remedies usually employed in croup is then discussed, and their real value indicated, and the error of supposing this disease to consist in ordinary inflammation of the windpipe is alluded to; and, while the inefficiency of the remedies commonly used in croup is pointed out to be such as theory would lead us to expect, the same fact is shown practically by the results of experience, which clearly indicate that under all plans of treatment, exclusive of tracheotomy, croup is a very fatal malady. The value of emetics is also examined, and the danger which frequently results from the employment of tartar emetic is dwelt upon.

The circumstances which tend to diminish the chances of success from tracheotomy are then referred to under the following heads:—

a. The age of the patient.
b. The existence of pneumonia or bronchitis.
c. The presence of other diseases, such as measles, hooping-cough, &c.
d. The employment of depressing remedies prior to the operation.
e. The postponement of tracheotomy until the patient is *in extremis*.
f. The extension of the croupous exudation into the lungs.

After suggesting a few practical hints in connection with the operation itself, and in regard to the inhalation of chloroform in these cases, and after briefly glancing at the various points which have been examined in detail, the author thus concludes: It only remains to warn the practitioner against expecting a large share of success from this operation, inasmuch as in our present inability to ascertain whether the croupous exudation is limited to a small portion of the windpipe, or whether it extends into the minute branches of the bronchial tree, we must necessarily oftentimes recommend its performance in cases in which death must almost inevitably take place. But while a careful examination of this subject clearly indicates the propriety of making an opening into the trachea in those cases of croup in which false membrane exists, and of not postponing the operation until the last moment, and while it leads to the anticipation of a decided diminution in the rate of mortality from this disease when the early performance of tracheotomy is extensively practised, the student of science cannot but feel that tracheotomy is at best but an expedient of relief, capable, by its mechanical action, of obviating certain tendencies to death, and, by enabling the administration of support to an exhausted system of affording time for the due occurrence of certain processes necessary to recovery. Nor can the practical physician forget that some effectual remedy for croup has still to be searched for, not to be found in all probability until the true etiology and pathology of the disease are far better understood than at the present day. At the same time it is impossible to foretell how near at hand the day may be when there shall be found a man who will do for croup what Jenner did for smallpox, or when there shall be discovered a remedy for this malady as certain in its power, and as efficacious in its action, as is iodide of potassium in syphilitic periostitis, or as is quinine in ague.

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22. *Incisions in Anthrax.*—MAURICE H. COLLIS, Surgeon to Meath Hospital, says (*Dublin Quarterly Journ. Med. Sciences*, August, 1859) that "the incision into anthrax, whether made early or delayed till sloughing has done part of the surgeon's work, must be deep rather than extensive. Usually it is said anthrax is a flat swelling. The fact of its flatness, or rather of its extent, hides the real amount of elevation, which is, in most cases, considerable. Hence incisions into anthrax seldom go down *through* the inflamed skin and areolar tissue. But even if they did go down to the fascia, they would fail in effect unless they also went through it. The fascia is highly inflamed in anthrax; in fact the essential difference of anthrax from furuncle consists in the inflammation being deeper and implicating the fascia. When fascia is inflamed, much plastic exudation

takes place, both in its substance and under it; and the tendency of anthrax to spread indefinitely is to be thus accounted for. The pent-up plasma, quickly producing pus and slough, can get no vent until there is an adequate opening in the fascia, and this opening should be made by the surgeon as early as possible, if he would avoid the unpleasantness of useless and repeated cutting, and the extensive sloughing which will occur if he neglect to make it. Plastic exudations find great facility in travelling under the fascia, dissecting and destroying its vascular connections, and ultimately causing much of it to perish. This is well known, as a general principle of surgery, and it is strange to find it overlooked as the cause of the spread of anthrax. We readily acknowledge the mischief it does in periostitis, in diffused inflammations of erysipelatous character or connected with paronychia, and in many other analogous cases; but books of surgery are, for the most part, silent about it in the case of anthrax. And yet every one must have observed phenomena which can only be explained by it. The extent and mode of extension of the swelling, the real depth to which the surgeon must cut if he is to do good rather than harm, and the fact of large flakes of fascia ultimately coming away as dead core (in addition to areolar tissue), leaving the underlying muscles bare, must have been often observed, and must often, doubtless, have had their influence on the practical observer; but the junior surgeon and the pupil have not been shown their practical bearing. The rule I have given above, to cut deep rather than wide, is founded on the observation of these facts, and will be found satisfactory, saving the surgeon the opprobrium of cutting twice or oftener without benefit to his patient. It is very easy to know when we are deep enough: by taking hold of the flaps made by our crucial incision, we feel if they are quite loose. Our incision is not deep enough unless we can lift up the point of each flap with ease from the parts underneath. This cannot be done unless our knife has gone through the fascia, and made a crucial incision in it almost as extensive as in the skin. The wounds we have made should be almost as deep at their extremities as in the centre, where they intersect. If we have made our incisions early, before actual sloughing has commenced, as we sometimes, though rarely, have an opportunity of doing, the flaps will curl up if the wound is deep enough, and will leave a widely gaping wound: but if we do not see the anthrax until more or less of the skin is undermined and dead, the gaping of the wound will not be so marked, and the best test is the one I have given above, of lifting the flaps with a forceps, and proving that they are loose. If this rule is followed, we shall have few cases in which we must come and cut again.

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23. *Difficulties attending upon the Treatment of Strictures of the Urethra.*—Mr. Henry Smith, in a recent paper (*Med. Times and Gaz.*, August 13, 1859), called attention to a difficulty in the treatment of stricture of the urethra, which consists in the absence of improvement in the power of passing the urine, although dilatation has been carried on in a satisfactory manner. "This is a difficulty," he remarks, "which is exceedingly annoying and distressing, because, in the first place, the patient naturally expects that relief will be given so soon as an instrument of at least a moderate size can be introduced into the urethra, and the surgeon knows that he has to deal with a feature in the complaint which may depend upon circumstances over which he has little control, and which will render the treatment of the case more troublesome. Mere density or tightness in a stricture acting as a bar to progressive dilatation, is a condition much less likely to hinder a satisfactory termination than the one alluded to; for in the one case, although the dilatation may advance but slowly, the improvement in the stream of urine is generally commensurate with the mechanical progress, and satisfactory both to patient and attendant, while in the other it will happen that the exercise of the utmost skill and endurance is but faintly rewarded.

"Next to extreme irritability of the urethra, this one feature of absence of improvement in the stream, has been a source of greater difficulty and annoyance than anything else. Among a considerable number of very severe cases of stricture which have lately been under my care, my attention has therefore been much directed towards ascertaining its cause, and removing the symptom, if it may be so termed. In some cases it has not been difficult to account for it,

as where one or more fistulous sinuses exist; when such is the case the bladder may be healthy and the urethra be fairly dilated, yet the patent condition of the artificial openings, which take so long to close, allows the greater portion of the urine to percolate through them, little comes through the urethra, and that little in any volume. In instances of this kind the patients may be assured that the stream of urine will increase as the sinuses close up, slowly as that event is too often known to take place.

"There are, however, other cases of severe stricture, uncomplicated with fistulous openings in the perineum, where the surgeon has been able to carry on dilatation in a satisfactory manner, and to such an extent that a good-sized catheter may pass, and yet there is either no improvement at all in the stream, or, if any, it is so slight as to be almost inappreciable. This obtains also not only in instances of stricture in persons of advanced age and of debilitated power, but it is occasionally met with in patients either in the very prime of life, or in those not much above adult age. It is in some of these latter cases that it is extremely difficult to understand the meaning of this symptom. It is considered by some men of large experience that it is the bladder alone which is in fault; that it has become weakened and dilated by the persistence of the obstruction in front; and that, even when this latter has been removed, the viscus does not recover its tone sufficiently to expel its contents in an effectual manner. That this is the true solution of the question in some instances there cannot be much doubt; but I am induced, by careful observation, to believe that in a considerable number of these cases the loss of power in the bladder is more apparent than real, and that the impediment to the volume and flow of the urine is in the urethra itself, notwithstanding that dilatation has been carried on to a measure with which the passing of urine in a small stream, or in drops even, seems almost incompatible. I have noticed that this very distressing feature has existed both in instances where the stricture has been exceedingly difficult to penetrate, the canal not being especially irritable, and in those cases where there has not been very much difficulty in overcoming the obstruction; but the urethra has been extremely sensitive. I have, moreover, noticed, especially in the latter cases, that more than a single stricture has existed; that there has been one near the meatus, or one or two inches from it; and as a rule, with but rare exceptions, the anterior stricture or strictures have been found to be most irritable and unyielding.

"In such instances as these it is extremely difficult to overcome the irritable condition of the urethra, and to dilate the canal; and then, after this has been accomplished to such an extent that a No. 8 or 9 catheter is introduced, there is the mortifying result of little or no increase in the stream of urine, or even of a diminution in size. Now, I believe that in such instances, especially where the patients are young or the stricture has not lasted long, the fault is not in the bladder, but that that organ expels the urine with its wonted power, and that the fluid coming in contact with the irritable portion of the canal—although it has been dilated to the extent mentioned—causes it to contract forcibly, and thus produce the fine stream observed. Careful examination of the urine in these cases shows absence of any disease of the bladder; and moreover, it will be seen that, small as the stream is, it is expelled with considerable force and continuously; which circumstance will not be produced, I apprehend, by the mere action of the urethral muscular fibres, whether voluntary or involuntary. In a very well marked case of simple loss of power in the bladder lately under my care, in the person of a very fine young officer, all the symptoms of stricture were present; but there was hardly any impulse at all given to the urine as it was being evacuated, and the patient was compelled to strain violently. There was not the least obstruction in the urethra itself, and by well emptying the bladder artificially, and by attention to the general health, this viscus gradually regained its tone, as evidenced by the increasing size and force of the stream.

"In the treatment of the cases I have been considering, much patience is required, both on the part of the surgeon and the sufferer; for, as I have before stated, the latter is too apt to be greatly disappointed at the little improvement which is perceptible, and in his distress is too liable to be misled into undergoing some heroic treatment which may either destroy his life, or give relief

merely for a brief period. It is only by the continuous dilatation of the diseased canal to as great an extent as it will admit of, that the result so much desired will be obtained. If the patient is not advanced in years, or has not had stricture for a long time, he may be assured that a persistence in the treatment will be attended with satisfactory results; sometimes the desired relief will happen suddenly, at other times, and most frequently, the increase in the power of urinating will be only gradual, but will not be marked until an instrument of considerable size has been introduced. When, however, the features of the case indicate that the want of stream is due to a loss of power in the bladder, a long time elapses before the organ recovers itself, although the urethra has been well dilated by the surgeon, and is kept patent by the sufferer himself. It is especially important in these cases to attend to the general health; for it will not unfrequently be found that this has suffered much, and that the loss of power in the bladder is but a symptom as it were of constitutional debility, rather than the mere result of an obstructed urethra."

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24. *Perineal Section for Cure of Stricture of the Urethra.*—Mr. Henry Smith states (*London Med. Times and Gaz.*, August 13) that "about a fortnight since I had in my house, on the same morning, two unfortunate gentlemen, in the prime of life, who had undergone the perineal section; one, five years since, at the hands of a London surgeon of large experience; the other, three years previously, had been cut by Mr. Syme himself in Edinburgh. They were both in a wretched condition, the one had his perineum riddled with three fistulous openings; but as Mr. Syme himself was not the operator here, the proceeding was of course unskilfully and improperly done, and I will say no more about it. The other case, however, was treated by Mr. Syme himself, and the operation was of necessity done according to the rules laid down by that surgeon. Yet, where is the complete remedy? The unfortunate gentleman assured me that before he left Mr. Syme's care after the operation, he felt the stricture returning, and that notwithstanding he persisted in passing the instrument every fortnight, as he was told to do, the canal contracted, so that he was unable at the expiration of ten months to pass anything at all. Since then he has been roaming about from one surgeon to another, in the hope of getting his stricture dilated. When he first consulted me some six weeks since, I could only with the greatest perseverance succeed in introducing a small No. 4 catheter, although a distinguished surgeon in Dublin had introduced a No. 8 only a fortnight previous. There was no fistulous opening left here, as in the other; but there is the irritability and contractility of the urethra as before, although Mr. Syme performed the operation himself, and according to the information given to me by the patient, assured him it would be a certain cure. I have before enunciated the opinion that not only does this operation not prevent the return of the stricture, but that the recontraction becomes more severe than before. As I had not the opportunity of seeing this gentleman before he was cut, I cannot positively state whether this holds good here or not; but that the induration still remained, or had reformed at the site of the old disease, was quite evident by running the finger along the perineum. Cutting cannot possibly get rid of this; and so long as this remains, the stricture will persist."

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25. *Operations for Stone in Women.*—The *Med. Times and Gazette* (July 23d, 1859) contains a summary of 24 cases of operations for stone in women. Of these, 16 occurred in the practice of Metropolitan Hospitals, and 8 in that of Provincial institutions. Of the whole, 22 cases resulted in recovery, and in 2 the patients died. In both the cases which ended fatally the patients were adults, who had suffered from stone from early childhood, who were worn out by the irritation, etc., produced, and in whom the stone was of very large size.

Age at which stone is most frequent in females.—In employing our series of cases to determine the age at which vesical calculus most frequently occurs in the female sex, 5 cases (Nos. 3, 8, 16, 18, and 19) must be excepted. In two of those the concretion had formed on hair-pins intentionally introduced into the urethra, and in the others it was consequent on certain injuries to the vagina to which the adult only is exposed. Taking, then, the remaining 19 cases as our

basis, we find a remarkably close correspondence between females and males, in the period of life most liable to idiopathic vesical calculus. In 6 of the cases, the patient was under ten years of age; in 4 between ten and twenty-five; in 5 between twenty-five and forty-five; and in 4 between forty and sixty. The proportion of cases in which children are the subjects of stone, would be increased if we were to count as such the subjects of cases 17 and 22, in whom symptoms had existed from early childhood, although they were not operated upon till adult age. Probably one or two other of the adult cases ought, in like manner, to be counted with the children, if their real history were known. The facility afforded by the female urethra for the escape of small calculi, which, if allowed to remain would have constituted the nuclei of larger ones, is the reason usually assigned for the comparative rarity of cases requiring surgical relief. For anything which can be adduced in proof of the contrary it is a correct explanation, since we have no reason for thinking that the remote causes of calculous affections obtain less commonly in females than in males. It is interesting, however, to note that this exemption from large calculi is afforded impartially to the different periods of life, and that, consequently, the residuary cases afford the same proportionate numbers of the different ages that the whole group itself did. In our analysis of 186 lithotomy operations in males, which we gave in this journal for January 8, 1859, 109 were under ten; 36 between ten and twenty-five; 8 between twenty-five and forty-five; 33 between forty-five and seventy-five. These relative members correspond as closely as can be expected with those given above, and show that the ages at which stone in the bladder is most frequent are pretty nearly the same in the two sexes.

Fatality of operations for stone in the female.—We are not aware that any statistical data have as yet been collected respecting the proportion of deaths which occur after the removal of stone from the female bladder. The list before us gives two deaths to twenty-four cases, or one in twelve. This rate of mortality is, we fear, not at all above the true average. During the past six months (not included in our statistical period) another death has occurred in a woman operated on in one of the London hospitals, and we are acquainted with the details of a fourth which happened in a Provincial institution about six years ago, and just prior to our first publication of statistics. Regard being had to the very simple nature of the operation, a mortality rate of one in twelve must be considered as high. It is not, however, so much the nature of the operation itself as the antecedent state of the patient which influences the lithotomy death-rate both in males and females. In speaking of the causes of deaths in males, we had to point out that it was in the cases which had been long neglected—in which the bladder, and, above all, the kidneys had become diseased—that the deaths chiefly took place. The same remark applies to the series now before us. The two women who died were both adults, who had suffered from stone since childhood. They were both in worn down health, and had very large calculi. In one of them an autopsy proved that most extensive renal disease existed. As regards the operation, the death was undoubtedly a *post hoc*, but only in a very limited sense a *propter hoc*.

Different modes of operating.—In respect to the directions in which incisions should be made, and as to how dilatation should be conducted, very various indeed have been the procedures recommended for the removal of calculi from the female bladder. Lithotomy, properly so called, that is, cutting into the bladder without dividing the meatus, has, however, been pretty much abandoned, and is now scarcely thought of in English practice. The only difference of opinion respecting the use of the bistoury, which now obtains, is as to the direction in which the meatus should be divided; some preferring, with Colot (1727), to cut directly upwards; others, with Chelius, to divide the urethra downwards into the vagina; and others, with Dionis (1716), to make an oblique incision in each side. Sir B. Brodie has advocated the first of these, and Mr. Liston always adopted the last. A modification of the last was adopted by Mr. Hilton, in Guy's Hospital, in Case 3, which, considering the large size of the stone, and the bad health of the patient, was remarkable in its perfect success. Mr. Hilton adopts the plan of retaining a small catheter in the bladder, and of supporting the floor of the urethra—which had been, as it were, let down by the lateral

incisions—by means of sponge placed in the vagina. With regard to dilatation, it seems generally admitted, that it is best effected by a valve dilator, more or less closely resembling that bearing Mr. Weiss's name. Practically, we may classify operations for the removal of calculi in females under the heads of Lithectasy, or dilatation only, Urethral Lithotomy, and Lithotrity. The appended table shows the proportion of cases, in which each of these were respectively adopted in the series before us, and also indicates the results obtained as regards recovery and control over the bladder.

Nature of Operation.	Number of Cases.	Died.	Recovered.	Had incontinence of urine.
Lithectasy.—Extraction of the stone whole without incisions . . .	7	None.	7	None.
Lithotomy A.—Extraction of the stone whole after limited incisions . .	3	None.	3	None.
Lithotomy B.—Extraction of the stone whole after free incisions . .	8	2	6	5
Lithotrity.—The stone crushed, and either removed piecemeal at the time, or left to escape spontaneously	4	None.	4	None.

Incontinence of urine as a result.—Dionis candidly informs us that three-fourths of the women on whom he operated for stone remained afterwards affected with incontinence of urine. This was in 1716, and before the practice of lithotrity; his favourite operation being by double lateral incisions. He considered that incontinence could scarcely be avoided if the stone were large. Mr. Coulson,[1] in allusion to it, also writes, "This is the great objection to nearly all the methods adopted for the extraction of calculi from the female bladder. A considerable proportion of those operated on labour ever afterwards under the distressing accident of incontinence of urine." With these statements before us, the results of modern hospital practice, as shown in the above list, are certainly good. Out of the twenty-two[2] patients who by different methods were rid of vesical concretions, two died, and of the remainder only six suffered afterwards from any degree of incontinence of urine. We might fairly claim to omit three of the other cases, inasmuch as in them unusual complications existed which altered the nature of the operation, and hindered the perfection of its result. In two of them hair-pins were present, and in the other the bladder had been injured by a fragment of impacted glass. Leaving these out of view, then, we have nineteen instances of the extraction of stone under ordinary circumstances, and of these only three suffered afterwards from incontinence. As explanatory of this satisfactory result, we must allege the greater frequency with which lithotrity is now adopted, and the increased caution as to the practice of incisions. Excepting where the dimensions of the stone calculus are known to be unusually great, the surgeon now never thinks of commencing his operation by incisions, as used formerly to be the case with many operators. He pursues the far better plan of ascertaining, in the first instance, whether the stone will not pass after moderate dilatation of the passages, and, on finding that it will not, then proceeds either to crush or to make such limited notches in the urethra as are absolutely necessary. Instead of dividing ourselves into the advocates of dilatation and those of incisions respectively, we are now content to adapt special measures to each individual case, without laying down invariable rules. Every one admits that the moderate dilatation needed for the extraction of small stones is attended with almost no risk as to incontinence, and that in such cases incisions should never be thought of. After incisions to however small an extent, and after dilatation when immoderate in extent, it is equally generally admitted

[1] Diseases of the Bladder, page 539.

[2] Cases 8 and 20 are omitted from the above list for reasons which will be obvious to the reader.

that the risk of this accident is considerable. Which of the two has the less of risk it is difficult to say positively, but probably the balance of evidence is somewhat to the advantage of incisions. But let us ask, why should either be resorted to? Why not in all cases of large stones in females employ the lithotrite? There may be a few very exceptional cases in which the very large size of the stone and the worn out health of the patient (as in case 17 in our list) render lithotrity inadmissible, but even as regards them, the result of incision treatment is not encouraging, and they are besides very rare. In all others, however, in those, for instance, in which the stone is neither too large nor too hard to be crushed, we can see no good reason whatever, why a patient should be subjected wilfully to the risks of incontinence, which undoubtedly attend both immoderate dilatation, and the employment of incisions, whilst we have such an instrument as the lithotrite. Lithotrity in the female is, from obvious anatomical considerations, simple and easy. As far as we are aware, its general results have been most satisfactory. As seen above in the cases before us, it was adopted four times, and in all the instances the patients recovered without any remaining incontinence.

Proportionate frequency of stone in the two sexes.—It has been generally believed that about one female comes under surgical care for stone in the bladder to every twenty males. This, at least, is the conclusion come to by Mr. Coulson, in his work on "Diseases of the Bladder," after citing data from various authorities upon the subject. In other words, about five per cent. of our stone patients are females. This result appears to agree very closely with what has occurred in our English hospitals during the period which our statistical reports comprise.

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26. *The Reparative Process in Human Tendons after Subcutaneous Division for the Cure of Deformities.*—W. ADAMS, Esq., read before the Royal Medical and Chirurgical Society (June 28) a paper on this subject, illustrated by a series of specimens and drawings from fifteen post-mortem examinations. Specimens of reunited tendons after division were exhibited from ten cases, and also drawings, made by Ford, of the recent appearances in thirteen cases, at periods between four days and three years after the operations. These specimens had been collected by Mr. Adams during the last eight years, and were principally from patients operated upon at the Royal Orthopædic Hospital; but for two specimens he was indebted to Mr. Erichsen and Mr. Curling. After alluding to our at present scanty information on this subject, and describing the recent appearances in fifteen cases, the author gave a general summary of the reparative process, describing—1st. The immediate results of the operation. 2dly. The commencement and nature of the reparative process. 3dly. The general appearance and structure of the newly-formed connective tissue, or new tendon. And 4thly. The junction of the new with the old tendon. This was followed by an account of the circumstances which may interfere with the perfection of the reparative process, or entirely prevent it, so that non-union of the divided tendon may result. Complete failure of union had been witnessed by the author only in the posterior tibial tendon, but it appeared that there is considerable risk of such an occurrence whenever tendons are divided in or near to dense tubular sheaths. It was shown that imperfect union might result either from some constitutional defect in the reparative powers of the patient, or from injudicious after-treatment in a variety of ways, but principally from too early and too rapid mechanical extension. The conclusions which the author considered to be established by the above series of cases were arranged under nine different heads. It was stated that tendon is one of the few structures of the body capable of reproduction or regeneration, and that the newly-formed tissue acquires within a few months of its formation the structural characters of the old tendon so perfectly, as that, under the microscope, it is with difficulty distinguishable from it; but it does not acquire through its substance the uniformly opaque, pearly lustre of old tendon; in the mass it retains a grayish translucent appearance, so that the recent section affords an easy method of distinguishing the new from the old tendon. The greatest length of perfectly formed new tendon which the author had seen was two inches and a quarter, and this was in the

tendo-Achillis of an adult, a year and a half after it had been divided by Mr. Curling. That the process by which new tendon is formed is essentially similar in animals and in man; that the perfection of the reparative process is in direct proportion to the absence of extravasated blood and inflammatory exudation; and that the sheath of the tendons, when consisting of bone-textured areolar tissue, as in the tendo-Achillis and other tendons surrounded by soft tissues, is of importance—1st. In preserving a connection between the divided extremities of the tendon. 2dly. In furnishing the matrix in which the nucleated blastematous, or proper reparative material, is effused. 3dly. In giving definition and form to the newly-developed tendinous tissue. That the new tendon always remains as a permanent tissue, and as an integral portion of the tendon, the divided extremities of which it has been formed to reunite. In the specimen exhibited, in which Mr. Adams had divided the tendo-Achillis three years previous to death, an inch and a quarter of new tendon was clearly traceable. The average length of new tendon formed in children to reunite the divided extremities of the tendo-Achillis, Mr. Adams considers to be from half an inch to an inch, and in adults from one to two inches. The author considered the facts adduced in this paper were amply sufficient to disprove the linear-cicatrix theory—the theory at present in vogue, and supported by all his colleagues—which assumes that the newly-formed tendinous structure has a disposition to undergo a process of gradual contraction, such as we see taking place in the cicatrices of the skin after burns, to which it has been compared, and that ultimately it becomes absorbed, the muscular structure at the same time becoming elongated by the force of the contraction of the cicatrix, so as to allow of the reapproximation of the ends of the divided tendons, and the formation of a linear-cicatrix. From the present observations it appeared that in the cure of deformities, muscles are elongated by the increased length of their tendons, obtained by means of subcutaneous division, and the development of new tendon formed for the purpose of reuniting the divided extremities of the old tendon. The mechanical and physiological effects of this increased length of the tendons were described; and lastly, the author stated that when recontraction of the foot takes place, and the deformity returns at a distant period after tenotomy, this does not depend upon absorption of the new material, or new tendinous tissue formed previously to unite the divided extremities of the old tendon, but upon structural alterations taking place in the muscular tissue. In three cases of relapsed deformity of the foot examined by the author, the new tendinous tissue formed after the previous operations remained, and could be easily distinguished from the old tendon. These facts were regarded as additional evidence against the linear-cicatrix theory.—*Med. Times and Gaz.*, July 30, 1859.

OPHTHALMOLOGY.

27. *Acute Pain of Glaucoma removed by Operation.*—Mr. Haynes Walton relates (*Med. Times and Gaz.*, July 16, 1859) the following case:—

"A female, in middle age, was sent to me in private by Mr. Wall, of Paddington, with acute glaucoma of the left eye, which was very tense, much injected, the pupil dilated, and the iris pressed forwards by the semi-opaque lens. Vision was quite lost; and I was consulted solely on account of the severe suffering, sometimes lasting for several consecutive hours, but more generally in paroxysms, which nothing has been able to subdue. The extreme vascularity of the eyeball, and the general plethora, induced me to order cupping to the temple, and purgatives. Not the slightest benefit ensued. Opiates, both locally and generally, were then tried, with no more effect than securing better nights' rest than hitherto, but the general health was deranged by the narcotics, which were discontinued. Other drugs were administered in vain. Thus, after a period of five months, the patient got no material benefit either from myself or from any other surgeon by whom she had been treated, and she had applied to several

She expressed her desire to submit to any operation likely to afford relief, and she was the more anxious as the right eye was certainly sympathetically affected, as manifested by intolerance to light and lachrymation. Rather than extirpate the eyeball, a practice that my patient had heard of, and which is certainly very objectionable if it can be avoided, or rather than reduce it by the removal of the anterior portion, an operation that is very serviceable in checking certain morbid actions, and which should when applicable be preferred to the above, I determined to try the experiment of extracting the opaque lens, and evacuating some of the vitreous humour. I effected this without wounding the iris. The vitreous humour was apparently quite normal.

"The acute pain ceased, and there was less uneasiness during the healing process, which was quickly effected, than is often experienced in successful operations for the extraction of the cataract. It is just five weeks since I operated. There has been no recurrence of pain; there is yet conjunctival vascularity; there is no other abnormal appearance about the eye, except that the pupil is irregular, a part of it being adherent to the corneal wound, but there is no prolapse. The right eye has lost the sympathetic irritation.

"I desire not to set more value on a single example like the present than it is worth, nor do I attempt to generalize from a single instance; but even as a unit, as an isolated fact, it has its value. It will encourage me to investigate the matter further, and I doubt not that with this publicity the subject will receive attention from others. I shall not attempt to explain the rationale of the operation, nor do I venture to speculate on any advantages that may be gained by this means when adopted in the earlier stage of the disease. My object is to record an experimental success in the removal, by a simple plan, of a distressing symptom that will not at all times succumb to any ordinary treatment, except that which mutilates or disfigures. I can affirm, from personal experience, that Græfe's iridectomy does fail in these instances.

"The tendency to internal hemorrhage, when a diseased eyeball is incised, is well known; and I adopted the generally successful preventive of applying a pledget of cotton wool and a bandage over the eye, and retaining it two or three days. No bleeding occurred."

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28. *Cancerous Ulceration close to the Inner Canthus, treated with Sulphate of Zinc Paste.* Dr. WILLIAM MACKENZIE, of Glasgow, relates (*Ophthalmic Hospital Reports*, April, 1859), the following very interesting and instructive case. A patient, aged apparently about fifty-five, and who attributed the spread, if not the origin, of his complaint, to the depression of mind arising from pecuniary loss, applied to me on the 1st of February, 1859, on account of a cancerous ulcer on the side of the nose, close to the inner angle of his left eye. It was fully the size of a fourpenny piece, of irregular shape, covered with a scab, and surrounded by hard and elevated edges. The papillæ and carunculæ lacrymales, and the palpebral conjunctiva were inflamed, and the disease seemed to be extending in the direction of these structures.

I felt no doubt that were the ulcer left to itself it would gradually spread, and prove rebellious to all applications of a soothing description. Having repeatedly found, also, that extirpation of such a disease by the knife, even when care was taken to cut into the sound integuments, although followed by a firm cicatrice and an apparent cure, was succeeded after a time by a renewal of the scirrhous hardness and intractable ulceration, I determined in this case to try as an escharotic the sulphate of zinc, as recommended by Dr. Simpson, of Edinburgh. I was partly led to this course, too, by observing that I could not extirpate the diseased part without removing the lower papilla lacrymalis.

Having driven off by heat the water of crystallization of a few grains of the sulphate of zinc, and reduced the residuum to a fine powder, I mixed it with a little glycerine, so as to form a thick tenacious paste. Taking a little of this on the point of a bit of stick, I applied it over the scab and over the hard edges of the ulcer, and covered the part with dry lint.

Next day, I found that the application had given very little uneasiness; but that it had acted in destroying almost entirely the hard edges of the sore, and left the whole of its surface free from scab and of a florid healthy colour.

Two or three times subsequently I covered the edges again with the zinc paste; after which I left the wound to cicatrize, under the application of dry lint. I touched the conjunctiva and papillæ lacrymales occasionally with the four grains' solution of nitrate of silver, under which application they speedily freed themselves of inflammation.

On the 24th March, the patient called on me, with a firm cicatrice, of a healthy hue, in the site of his former disease.

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29. *Treatment of Obstinate Granular Ophthalmia by the Local Application of a Solution of Chromic Acid.*—Dr. Hairion recommends a solution consisting of equal parts of chromic acid and distilled water as a useful application to granular lids. It is applied by means of a camel's hair pencil, and is, he says, neither very painful nor followed by any great amount of reaction. Of fourteen cases treated by it, in eleven the result was satisfactory. The cauterizations were made at intervals of four, six, or eight days, and the time occupied in the cure was from four weeks to four months. Considerable prudence is required in the adoption of his mode of treatment, which is only recommended in obstinate cases.—*Archiv. Belge de Med. Milit.*, Sept. 1858.

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30. *Secale Cornutum in Disturbance of the Accommodation-power of the Eyes.*—When local hyperæmia is dependent upon a laxity of the walls of the bloodvessels, advantage attends, Professor Willebrand, of Helsingfors, states, the employment of secale cornutum. He was induced to use it in these cases by the expectation that a means which acts so specifically upon the unstriped uterine muscular fibre must excite some power over the analogous structure of the arteries, and which its hæmostatic action proves, in fact, that it does. During his investigations he soon became struck with the fact that the heart of persons employing it soon underwent contraction in all its dimensions, and that even within the first twenty-four hours—a circumstance which he has frequently verified since. The first case that came under his care was an example of exophthalmos, accompanied with enlargement of the thyroid gland and hypertrophy of the heart. After a few weeks' use of the secale, the hypertrophy of the heart and thyroid, as well as the projection of the eye, much diminished. The patient, however, left off the medicine, and the exophthalmos returned worse than ever. Since that period he has employed the secale in various cases in which increasing contractility of the muscles of the bloodvessels or other tissues seemed to be indicated. It was found of especial advantage in a disturbed state of the accommodation-power of the eye, especially induced by over-taxing the organ on small objects with an insufficient amount of light. Children from some of the schools have furnished the author with many instances, and they have always been relieved by the secale. He relates a case in which impaired vision was always brought on by sewing or reading, and wherein the signs of some amount of chronic congestion were visible. Relief rapidly followed, and when the affection recurred some months after, it was as speedily relieved. He has also found the secale of great use in several cases of acute or chronic inflammation of the eye, and especially in blepharitis and the pustular conjunctivitis of children, the case proving much more rapid, and relapse being much less rare, than when local means alone are relied upon. No benefit has been derived from it in granular conjunctivitis and trachoma.

Proceeding upon the theory of its stimulant action upon the vaso-motoric nerves, the author has extended the employment of the secale to other local disturbances of the economy; and, as already observed, he has had frequent occasions of observing its transitory influence in hypertrophy of the heart, without having any reason to believe that it is of any permanent utility in affections of this organ, the heart always returning to its former size soon after the use of the secale has ceased. In many cases of both chronic and acute hyperæmia it has proved of great service, and especially in cases of galactorrhœa, and in indurations, tumefactions, and catarrhal affections of the uterus. Also, it has been very useful in enlarged spleen from intermittent fever, and when large doses of quinine have failed. It is especially indicated in the cases of relapsing intermittent depending upon enlarged spleen. In erysipelatous affections, it has often

done good service applied externally as a cataplasm. The author formerly gave ten grains ter die, but now gives but five, combining it with magnesia, or, when chlorosis is present, with iron.—*Brit. and For. Med.-Chir. Rev.*, July, 1859, from Graefe's *Archiv. für Ophthalmologie*, B. 4, Ath. 1, s. 341.

MIDWIFERY.

31. *Placenta Prævia.*—Dr. DILL read before the Belfast Clinical and Pathological Society (Feb. 26th, 1859) a paper on this subject, in which he maintains that turning, if performed judiciously and at the proper time, affords the best chance for preserving the lives of both mother and child, and relates the following cases in confirmation of this opinion:—

CASE I.—Mrs. C., aged 30, April 21st, 1858. Mr. J. called me to see this patient, who was far advanced in pregnancy, and had been attacked with profuse uterine hemorrhage once or twice during the eighth month, and now, again, towards the close of the ninth. The placenta was felt adhering at the neck of the uterus; the os was about the size of a crown piece, and dilatable. The woman was weak, but there were symptoms of a living child. She was put under the influence of chloroform. I introduced the left hand, the os easily yielded, passed onward, punctured the membrane, got hold of one foot, turned, and delivered her, in the usual way, of a living child. The placenta very soon followed; the hemorrhage ceased; the woman did well; the child died within a week.

CASE II.—In June, 1858, I was called, by Drs. S. and J., to a woman residing in Fourth Street, who had been attacked with profuse hemorrhage at the close of the ninth month of pregnancy. She had been ill for nearly two days when I saw her. The edge of the placenta was protruding through the mouth of the womb. The waters had been discharged some hours. The woman was weak, and life in the fœtus could not be detected. It was agreed that turning was the proper course. Dr. J. introduced his hand, got hold of a foot, turned, after some difficulty, and brought away a dead child. Marshall Hall's plan of treatment was vigorously instituted, but without effect. The mother did well till the tenth day, when she died, but as I did not see her after being delivered, I cannot state the particulars.

CASE III.—Mrs. M. was brought into the Lying-in Hospital in a very weak and exhausted state from hemorrhage, about the full period of gestation. The placenta presented. Dr. Pirrie, whose patient she was, finding the os but slightly dilated and rigid, thought it better to introduce the "tampon." It remained in for four hours, during which time the pains had increased. The "tampon" was removed. The os was found to be farther dilated. She was placed under chloroform. Dr. Pirrie introduced the hand, turned, and delivered; the child was dead; the woman made a good recovery.

CASE IV.—On the 10th of September, 1858, Mrs. F., aged 33, took ill of flooding at 5 o'clock A. M. I was with her at 6 o'clock. She had completed the sixth month of pregnancy. She had lost a good deal of blood, and the discharge was continuing. The placenta presented; os, size of half a crown and rigid. I introduced the "tampon," applied cold, and admitted cool fresh air into the room. Mrs. F. was a delicate woman, and she had become rather weak. I was soon afforded the assistance of Dr. P., when we agreed to administer chloroform and deliver. I introduced the right hand into the vagina; found the os more yielding, so much so as to enable me to introduce two fingers; found it to be a cross birth; hooked one of my fingers into the groin of the fœtus, and soon brought it away; being premature, the fœtus was, of course, dead, but the mother made an excellent recovery.

CASE V.—On the 12th of July, 1858, at two o'clock A. M., I was sent for by Mr. Moore, resident pupil in the Belfast General Hospital, to see Mrs. L., whom he had brought into the house the night before. She had now reached the full

period of pregnancy, and during the last three months she had been attacked frequently with profuse hemorrhage. I found her very weak; pulse nearly gone. On examination, discovered a complete placental presentation. The hemorrhage continued. The child was found to be alive; but both mother and child were in extreme danger. She was placed under chloroform. I introduced my left hand, separated the posterior edge of the placenta from the uterus; passed onward; punctured the membranes, got hold of the child's foot, turned, and brought away a living child. Although the mother had a severe attack of puerperal fever, both she and the baby did well.

I was present when a member of this Society, in a case of placenta prævia, turned. His patient did well; but as I was only in the room, and did not make an examination, I am not in a position to say more.

I would conclude by stating that I know of no case in which the use of chloroform is more indicated, and in which the good results arising from it are so apparent, than when turning is practiced.

Lastly, Dr. Simpson's statistics show that where turning is practised, there is a mortality of one in three and a half, and consequently argues against it; whereas, I have brought under the notice of this Society six cases in which turning was the practice, and in some of them under very unpromising circumstances, with only one death, and which, I believe, was not to be ascribed to the operation. I may add, that in this case, at her own request, chloroform was not administered.—*Dublin Hospital Gazette*, July 15th, 1859.

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32. *Placenta Prævia.—Air-Pessary used to plug and dilate the Os Uteri.* Mr. J. J. Murray relates (*Med. Times and Gaz.*, June 11th, 1859), the following interesting case:—

"On April 16th, 1859, Mr. Picard requested me to visit Mrs. M. A., aged 29, who had previously been four times delivered at the full term, twice at the sixth month, and once at the seventh month. She was now in the seventh month of utero-gestation. Nine weeks previously profuse hemorrhage from the vagina had come on suddenly while she was resting on her return from a walk. Cold applications and rest were enjoined by her friends, but the bleeding did not entirely cease till eight hours afterwards. Four days later the hemorrhage had recurred, and she lost a large quantity of florid blood. Since this time, three days had never passed without bleeding, which was invariably aggravated by exertion, and she had therefore avoided all active movements.

"During the night of April 15, labour-pains had set in, accompanied by great loss of blood, and Mr. Picard had properly judged it expedient to plug the vagina. After this only slight dribbling hemorrhage had occurred; but the patient had fainted repeatedly, and her friends were now much alarmed.

"When I first saw the patient on the evening of April 16, the skin was cold, the pulse weak and rapid, and the lips extremely blanched. Labour-pains were recurring at regular intervals of ten or fifteen minutes, each pain accompanied by hemorrhage. On examination, the os uteri was found to be little more than the size of a shilling, its margins thick and firm. The tip of the finger encountered the spongy placental substance overlying the patulous os. Sweeping the finger round the external surface of the placenta, I broke down its uterine adhesions within an inch and a half of the margin of the os uteri; and, detecting the membranes towards the right side, I at the same time evacuated the liquor amnii. During an hour there was very little bleeding; but at the expiration of this period, another gush of blood accompanied a pain. On examination, it was found that the os uteri was still insufficiently dilated to admit two fingers. Alarming syncope occurred; and though the patient was plied with diffusible stimulants, she did not rally for some minutes. It was evident that her only safety lay in speedy delivery. With the double object of controlling the hemorrhage and dilating the os uteri, I now introduced a flattened caoutchouc air-pessary between the wall of the uterus and the presenting surface of the placenta; and, retaining the pessary in its place by the tip of the finger, I cautiously inflated it by means of the attached syringe. A portion of the surface of the expanded pessary could be felt closely opposed to the margin of the os uteri. During thirty minutes no bleeding ensued. Then the pains became

more powerful, and blood began to trickle over the thigh of the patient, who lay on her left side. More air was pumped into the pessary, and with its increased dilatation all hemorrhages ceased. From time to time we had demonstration of the value of the air-pessary as a plug; for whenever the trickling of blood recurred, it was effectually checked by further dilatation of the pessary by a few strokes of the syringe. About two hours after the first introduction of the pessary, the os uteri was ascertained to be nearly the size of the rim of a wineglass; and the air was permitted to escape from the now considerably inflated pessary, which then quickly collapsed, and was withdrawn. During a gush of hemorrhage which ensued, the hand was introduced, and the shoulder being found to present, the feet were seized, and the fœtus extracted. The placenta was immediately detached and removed, and the uterus became firmly contracted.

"From its unusually large size, the placenta must have extended over the greater portion of the internal surface of the uterus. Over the edges of a portion of the uterine surface of the placenta, there was a thin indurated crescentic layer of decolorized coagulum, four inches in length. This coagulum had probably been formed after the first onsets of hemorrhage, nine weeks previous to delivery.

"The lochia were somewhat more copious than usual; but the patient recovered without a bad symptom."

Mr. M. expresses the conviction that "in cases of uterine hemorrhage in which direct plugging and dilatation of the os uteri may be deemed improper, I believe the inflatable caoutchouc bag used as a vaginal plug, will be found to possess advantages over the tampon of sponge, cotton, or tow; for,—

"1. The material of the caoutchouc bag does not absorb; and it therefore acts more immediately and more efficiently in arresting hemorrhages than such substances as sponge, linen, cotton, or tow.

"2. When uninflated the bag is small in bulk, and its introduction is therefore easy and painless.

"3. When inflated to the requisite extent, it adapts itself to the surface with which it is brought into contact.

"4. Whenever it is desirable to ascertain the condition of the os uteri, the air may be permitted to escape from the inflated bag, which then quickly collapses, and is readily withdrawn without pain to the patient."

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33. *Cranioclasm.*—Prof. SIMPSON laid before the Obstetrical Society of Edinburgh some casts and preparations of the heads of infants whose delivery had been effected by means of a new variety of craniotomy, which he proposed to call *Cranioclasm.* The peculiarity of the new operation was the fracturing of the base of the fœtal skull behind the foramen magnum, and at other points; and this Dr. S. had found it perfectly possible to effect when a proper pair of forceps were employed, although many high authorities had declared it impossible, under any circumstances, to diminish the size of the base of the cranium. The advantages of the operation were chiefly these: 1. By breaking up the base of the skull, diminution of the head of the child was produced at its firmest and most unyielding part, and that to such a degree as to render the passage of the head through the contracted maternal canals as easy as the transit of the shoulders or pelvis of the infant. 2. The necessity of breaking up the vault of the cranium into small pieces and removing the fragments was obviated; and thus at once the practitioner was saved much time and trouble, and the patient was freed from the danger of laceration which attends the removal of the sharp pieces of bone. 3. As the bones of the fœtal head, remaining in their normal relation, could be more easily kept covered and protected by the soft parts, the mother ran less risk of injury during the extraction of the head. And 4. The extraction of the head was further facilitated by the firm hold which could be obtained with the extracting forceps. The operation was performed by perforating the skull in the usual manner, and afterwards applying a pair of duckbill forceps to the skull—one blade inside the cavity, the other on the surface, so as to grasp the occipital bone close up to the foramen magnum, where, by a slightly twisting movement, the bone was fractured. By applying the forceps deeply, in the same

manner, over the bones at the sides and front of the skull, fracture of the basis could likewise be produced at those points. The forceps hitherto employed in this operation was a craniotomy forceps with serrated blades; and all that was required was, that they should be free at the joint, of such a curve as to admit of their easy adaptation to the head, and with the inner surface of the outer blade strongly bevelled or hollowed, so as to enable the smaller or convex inner blade to sink into it, and thus take a very firm hold of the included portion of the cranium. As a matter of convenience, the joint should be made movable, and yet firmly fitting, so as to act like a scissor-joint. The operation had now been performed in three cases, all of which were illustrated in the casts and preparations before the Society. 1. There were two casts of the head of the first child that had been delivered in this manner. One of the casts represented the head in its collapsed condition; the other was taken from the same head after it had bean stuffed out and restored nearly to its normal dimensions; and on comparing the two, it would be seen that the head had been diminished to the extent of about two inches in all its longest diameters. 2. There was a preparation of the second child that had been delivered in the manner described; and in this case the operation had been performed in the lying-in hospital by Dr. Keiller in Dr. Simpson's presence. By handling the head, the members of the Society could feel to what an extent the base of the skull had here been broken down. 3. There were two casts of the skull of a third fœtus who had been delivered by cranioclasm—one showing it crushed and collapsed, the other showing it in its natural form and size. A preparation of the skull of this fœtus was also laid before the Society, which could be easily seen to be fractured at the base in several places, viz., behind the foramen magnum, between the frontal and sphenoid bones, and between the temporal bones and the basilar process of the occiput.—*Edinb. Med. Journ.*, July, 1859.

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34. *Is the Usual Treatment of Post-partum Hemorrhage Correct?* By Dr. Lyall.—Amid the thousand and one expedients for the arrest of post-partum uterine hemorrhage, there are a few of universal acceptation—taught in the schools, prescribed in didactic works, and employed in all emergencies demanding special interference. These seem to constitute a portion of the broad beaten tract of the obstetric source, from which no one may think for a moment of turning aside, or even of entertaining a doubt that he walks in the right way. It will readily suggest itself to the minds of every one, that I here allude to the mechanical irritation of the uterus to induce it to contract, and the removal of clots from its interior, so as to get it to contract upon itself. In this practice was I instructed, and in this faith for many years practised; and the instruction and practice are, in a great measure, now what they were when I was a pupil, thirty years ago.

Let us take a case, and go over the ordinary mode of procedure. After the removal of the placenta, which, perhaps, has been somewhat tedious, the uterus contracts at longer intervals and more feebly than usual; at each contraction a quantity of blood is thrown out; the uterus is grasped through the external walls of the abdomen, and urged, by frictions and pinchings, to contract and expel its contents, which are now found gradually to increase; these means failing, and the woman getting more and more prostrate, cold water is dashed over the belly, the hand introduced within the cavity of the uterus, and the clots removed. Brandy and opium are prescribed; still the uterus fails to contract so as to prevent hemorrhage, sinking continues, till, pulseless and exsanguined, the woman dies. This consummation I have never witnessed, and trust I never may; but all preceding the final issue has been to me a matter of experience; the grievous discomfort of the patient lying in a plash of cold water, and the scarcely less grievous anxiety of the attendant watching and waiting on.

Such is the usual course of a fatal case of post-partum hemorrhage, and the most common means employed in its treatment; the chief object in view being to get the uterus to contract upon itself, so as to arrest the vital flow. Many other means out of the thousand and one to which I have alluded, are, no doubt, often used—galvanism, squeezing a lemon within the cavity of the uterus, blowing up a caoutchouc or common bladder within it, etc. etc., one or other of

which has preceded a recovery—"post hoc ergo propter hoc," the steeple preceding the sands. The indication of cure is, no doubt, a right indication, as the contraction of the uterus is the means employed by nature to arrest the hemorrhage loss; and it is usually because nature fails in the performance of this natural act that we are called on to interfere. But do we act aright in the mode of our interference? If the uterus act feebly, and fail to contract favourably, so as to stop up the uterine vessels, will we aid its feeble powers by excessive stimulation or irritation? We know that the stimulation of other organs in a weakened or feeble condition may soon exhaust, but cannot invigorate them; and why may the uterus be an exception to the ordinary physiological rule? Moreover, are we right in removing the clot from the interior of the organ? The uterus has been powerful enough by its contractions on the child to expel it; and will it now contract more powerfully on nothing than on a contained clot? All muscular fibres, we know, by contraction lose power—that is, the more they are shortened by action, the less power they have to continue shortening by continued action; and why may the uterus be an exception to the ordinary rule? These questions, and questions such as these, I put to myself, but failed to answer them favourably to the ordinary practice; and thus it came about that my mode of procedure changed. I do not feel anxious although the uterus contain a clot, and have long ceased to vex the organ by external and internal manipulation. Is this or the usual practice right?

If we consider the ordinary and natural mode of arrest of hemorrhage, we find that the blood coagulates within and around the mouths of the bleeding vessels, and that this coagulation is promoted by the sickness and fainting induced by the loss of blood; the very loss of blood, in fact, is a chief means employed by nature in arresting its further flow. In epistaxis, for instance, the bleeding nostril gets plugged up with a clot, which in time restrains the further flow; and in ordinary wounds, unless an arterial trunk of considerable size be injured, the same thing takes place. In epistaxis, we do not sedulously remove the clot, but rather aid its formation by plugging the nostrils, and diminish, if need be, the vis a tergo by venesection, and thus imitate nature in her conservative efforts to check the hemorrhage. Why our practice in uterine hemorrhage should be different I cannot see. The organ, having failed to secure its own vessels by its customary contraction, adopts the mode of coagulation to effect the same purpose; and we, forsooth, wiser than nature, would compel her back again into her forsaken course, and say to the uterus, You shall cease to bleed by contraction, and contraction alone; a coagulum is not to be formed, or, if formed, must be removed; but removed at last once too often, the organ and its possessor fail in the contest, and cease to strive forever. While thus condemning the "meddlesome midwifery" of intra and extra-uterine manipulation for the arrest of uterine hemorrhage, in which the very life-blood of the patient is squeezed out of her by these ill-considered efforts, the casualty is by no means one for non-interference; something must be done, and that quickly; but let it be in accordance with the principles and the rules of art. When, in surgery, we fail to reach and ligature a bleeding vessel, our next resource is pressure; and as we cannot tie the vessels of the uterus, pressure is our chief and remaining stay. At the risk of apparent egotism, I shall go over the mode of procedure I usually adopt, both for the prevention and arrest of uterine hemorrhage. As soon as the placenta is withdrawn, I place the patient on her back, put her hand over the uterus, and cause her to keep it there until I have drawn a bolster-slip or similar bandage underneath her: feeling for the uterus, I lay over it a folded flannel petticoat, or other large compress, and fix it in its place with the circular roller as tightly as it can well be drawn; a very considerable pressure is thus applied to the uterus from the first, as the compress should be sufficiently large to make the antero-posterior equal at least to the lateral diameter. If hemorrhage do take place, the bandage is still further tightened, and the compress enlarged; and if there be escape to any extent of blood per vaginam, then the long bandage is also applied, as described in *Lancet*, 1850, vol. i. p. 384. The patient is kept supine and motionless, so as to promote coagulation and repress cardiac action. I permit no shifting of clothes, or indeed anything demanding motion or likely to excite arterial activity; as pressure and

quiet I conceive to be quite adequate to prevent a fatal issue in uterine hemorrhage, if properly and timeously applied.—*Proceedings of Obstetrical Society of Edinburgh* in *Edinb. Med. Journ.*, July, 1859.

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35. *Case of Labour during Typhus.*—Dr. William Cummins communicated (May 26, 1859) to the Cork Medical and Surgical Society the following case: Mary Sullivan, aged 35, when at the ninth month of pregnancy, had the misfortune to contract typhus fever from her child. On the fifth day a few rose-coloured spots appeared on the chest and abdomen, and the disease ran its course without unusual complication, but requiring a liberal allowance of wine, until the twelfth day, when labour commenced with a moderate sanguineous discharge from the vagina, and slight pains. About three hours after I was called to her, and found her mottled all over with dark, rose-coloured maculæ; teeth covered with sordes; tongue brown and dry; perfectly rational, and complaining of the pains. The scalp had been shaved, and she had lately had some sleep; urine in tolerable quantity; pulse 120, feeble; vagina soft, cool, and relaxed; os uteri nearly dilated, cool and natural; sanguineous discharge still continues moderately. The membranes were ruptured, and a tumbler of punch administered in divided doses; after a few hours the labour process terminated naturally, without a single unpleasant symptom, the child being born alive, but feeble; it survived two days. The mother required abundant stimulation, and an occasional opiate, with little other treatment, and that of the most ordinary kind; no bad symptoms appeared; and in ten or fifteen days she began to convalesce, and was soon perfectly restored; there was no secretion of milk, and the lochia were scanty. I was truly surprised to find, on making my vaginal examination during labour, that the uterus and vagina were the only parts of this poor woman not affected with the calor mordax of fever; it seemed as if a special Providence was watching over the parts most exposed to danger; as if Nature, with her accustomed vigilance, would not allow the dread disease to triumph uncontrolled over the double life; and truly it was wonderful to find, that when all the energies were prostrated, the essential uterine power was found equal to its task; and that while every organ, every function of the body, was impaired during a period of twelve days, the fœtus in utero was not left unprovided, and was brought into the world in a condition capable of surviving two days, although the natural source from which it should derive nutrition, after expulsion, was dried up.—*Dublin Quart. Journ. Med. Sci.*, Aug. 1859.

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36. *Sudden Death from Occlusion of the Pulmonary Arteries seventeen days after Parturition.*—Dr. Draper Mackenzie communicated to the Obstetrical Society of London (July 6, 1859) two cases which had recently occurred in his practice. In the first the patient was thirty-two years of age, and had been delivered of her second child after a natural and easy labour. Seventeen days afterwards, while apparently in good health, she rose up convulsively, said she was choking, and died. On subsequently examining the body, a large, branching, fibrinous plug was found completely stopping up the right pulmonary artery and its immediate ramifications, while the entrance to the left pulmonary artery gave lodgment to a large and tolerably firm concretion. The heart was rather thin, and the lungs slightly congested; but there was no further trace of disease about the body. In the second instance, the patient had an easy labour, and, for a few days afterwards, all appeared to progress favourably, when she imprudently left her bedroom and exposed herself to cold. Shortly afterwards she was seized with difficulty of breathing, gasping, and cold clammy sweats, from which death relieved her in twenty minutes. Permission to make a post-mortem examination could not be obtained, and hence it could only be surmised that the fatal event was due to the plugging up of some important but smaller vessel than those found obliterated in the first example.

Dr. Graily Hewitt stated that an elaborate essay on sudden death during the puerperal state had been recently published in the "Memoirs of the Imperial Academy of Medicine of Paris," but the author of that essay had not thrown any considerable light on the interesting question of the cause of death under these circumstances. The case of the Duchess de Nemours, who died from

plugging of the pulmonary artery, would be in the recollection of the Fellows of the Society. From personal inspection of the clot, he was able to state that in that case the clot occupied the pulmonary artery and several of its ramifications, and was so firm that it could not have been formed subsequently to death. Respecting those cases in which sudden death during the puerperal state was connected with the presence of coagula in the pulmonary artery, he would hazard the following supposition as to the causes which lead to the coagulation: The blood was so altered in the pregnant woman as to favor coagulation, in the first place; and in the second place, the maintenance of the recumbent position usually rigidly enforced by the medical attendant during several days after labour, favoured the stagnation of the blood in the heart and chest. It was not unreasonable to suppose that these circumstances had much to do with the occurrence of this fatal accident.

Dr. PRIESTLEY recommended that in all cases of sudden death from occlusion of the pulmonary artery, an attempt should be made not only to give an accurate account of the thoracic organs, but also of the condition of the uterus and appendages, more especially of the bloodvessels and lymphatics. The researches of Virchow on this subject had conclusively shown the connection between emboli formed in the uterine veins and plugs found in pulmonary arteries; the value of reports on such cases would therefore be greatly enhanced if the investigation were carried further than the immediate seat of obstruction. He thought it not improbable that in chloro-anæmic conditions of the system, when there is an increase of fibrin in the blood, a very small amount of acrid material generated in or near the uterus, and added to the blood circulating in the vessels, might cause deposition of the fibrin, and consequent occlusion of the vessels.—*Medical Times and Gazette*, July 23, 1859.

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37. *Cranial Blood-swellings.*—Dr. EDWARD RIGBY read a paper on this subject before the Obstetrical Society of London (July 6, 1859). After relating the histories of two examples, the author proceeds to show that these cases are not unfrequently mistaken for hernia cerebri, an exceedingly rare and dangerous malformation, and which never occurs on the parietal bone, but always over a fontanelle or a suture. On opening these cranial blood-swellings, they are found filled with dark, semi-fluid blood, beneath which the bone is healthy. The collection of blood is usually beneath the scalp and tendinous aponeurosis of the occipito-frontalis muscle, the bone being covered by its pericranium. Sometimes, though more rarely, the pericranium itself is elevated by the collection of sanguineous fluid; and besides these two forms, other modifications of cranial blood-swelling have been described, but if they really do occur, they are of exceeding rarity. Great misapprehension has been entertained by several authors respecting the progress of these tumours. Thus, it has been stated that much constitutional disturbance would be set up if this accumulation of blood were allowed to remain; that it would become putrid; that fever would result; that there would be danger of ulceration, sloughing, etc. Hence it has been recommended to open these swellings, and evacuate their contents at an early period, before these changes could occur. But the success of these modes of treatment has been anything but encouraging, and hence Dr. Rigby advises that the practice of Professor Naëgelé should be followed. This consists literally in doing nothing. As long as the infant remains healthy, the effusion will gradually be absorbed, so that by the time the child is a month old the tumour will have entirely disappeared.—*Medical Times and Gazette*, July 23.

AMERICAN INTELLIGENCE.

ORIGINAL COMMUNICATIONS.

Epilepsy succeeding a Suppression of the Menstrual Discharge, cured by the Supervention of Dysentery and the Restoration of the Catamenia. By Sampson Eagon, M. D., of Bot. County, Va.

Miss T. R., æt. 17, had the menstrual function established at 15, and it continued normally until the 17th year, when from exposure of the feet to moisture and cold at one of the periods, the catamenial discharge was arrested. For several periods she suffered the ordinary pain and discomfort of amenorrhœa, and at the fourth month of amenorrhœal suffering she was attacked with epilepsy; I was at this period called to see her. After an unsuccessful effort to re-establish the catamenial flux (it being a period), the patient was put upon treatment for epilepsy, the treatment consisting principally in the use of tonics, antispasmodics, revellents, and emmenagogues. The epileptic convulsions, however, continued to recur with undiminished violence, notwithstanding the treatment was assiduously persevered in for more than twelve months. The argent. nitras, several of the salts of iron and copper, as well as sulphate of quinia, were given a fair trial, but without decided benefit.

The paroxysms in this case were of the most violent character, and lasted for several hours night and morning of each day. After having fairly tested the virtues of the most popular anti-epileptic means in the case, with so little success, Dr. Woodson (the consulting physician) and myself abandoned all hope of relieving her. In July, 1858, dysentery became epidemic in her locality, with which disease she was attacked in a severe form. Having been called again to the patient at this period, and hoping now that the constant tenesmus and irritation of the large intestine might extend by contiguous sympathy to the torpid uterus, I was careful not to arrest the dysenteric discharge too hastily, prescribing only a half grain of opium, with two of the mild chloride of mercury, repeated every eight hours. On the second day I learned from the patient's mother, that the menstrual discharge was regularly flowing, and I found the young lady free from epileptic symptoms. The dysentery soon subsided, and the young lady quickly returned to almost perfect health, and is now quite well. The only means that have been since employed in the treatment, have been a pretty active purgative of aloes and rhubarb conjoined with a warm hip-bath, used for several nights before each expected return.

There are two points of interest, as I conceive, in the case above detailed, 1st. The undoubted relation which here existed between the amenorrhœa and epilepsy as cause and effect; and 2d. The means employed by nature to produce relief, an irritation propagated from the rectum and colon to the uterus by contiguous sympathy.

Singular Malformation of the Genito-Urinary Organs. By W. S. Duncan, M. D., Brownsville, Pa.—On the 4th of January, 1859, I attended Mrs. G——, in her second confinement. She gave birth to a plump, healthy looking child, rather above the average size. In handing the child

from the mother's bed to the nurse, I noticed a malformation of the external genitals. Closer inspection showed a slight linear depression extending from the summit of the sub-pubic arch, to a point a little in advance of the normal position of the anus. On each side of this depression was a protuberance having some resemblance to the labia majora, though more prominent and shorter than natural, the two sides looking as though they might have been the two halves of a divided scrotum. There was no trace or rudiment of labia minora or vagina. At the anterior extremity of the linear depression was attached a vermiform body, or rudimentary penis, nearly an inch in length, and four lines in diameter. It had a firm cartilaginous feel, and was bent in the form of a half circle, turning up towards the abdomen. At the end of this body was an opening two lines in diameter. The anus was entirely absent, nor was there the slightest depression between the nates.

From the formation of the external genital organs, no one could have decided positively to which sex this child belonged.

The parents refused to have any operation for the formation of an anus attempted, thinking, probably, that their child would be better dead than to live to adult life with this abnormal condition of the genito-urinary organs.

At the end of the third day after birth, death ensued, preceded by distended abdomen, constant fretfulness, and occasional vomiting.

Autopsy ten hours after death. Intestines distended with gas. Rectum much larger in diameter than natural, and prolonged forwards to the sub-pubic arch, where it was constricted to the size of a goose-quill, passed beneath the arch, and terminated in the vermiform body. Left kidney and supra-renal body absent, right kidney three times the natural size, though normal in shape. The ureter terminated in the posterior wall of the rectum a little below the promontory of the sacrum, *the bladder being absent.* There were *two* distinct and well formed uteri, each three-fourths of an inch in length, one attached to, and terminating in, each side of the rectum, at the superior strait of the pelvis. Each uterus had one ovary and one Fallopian tube attached to its posterior surface.

In this singular specimen we have congenital absence of one kidney, the bladder, vagina, and rectum in a single cavity, and all communicating externally by a single duct not more than two lines in diameter.

DOMESTIC SUMMARY.

Ligature of the Common Iliac Artery for Aneurism—Use of Silver Ligature—Death on the twenty-sixth day from Exhaustion, by Dysentery. By WARREN STONE, M. D., Professor of Surgery in University of Louisiana.—Charles O'Donnell, aged thirty-six years, was admitted into the Charity Hospital December 18, 1858, labouring under aneurism of the external iliac and upper part of the femoral arteries. It was a plain, unmistakable aneurismal tumour, extending from two inches below Poupart's ligament, to two inches and a half above it. The tumour was rather prominent, and the pulsation strong, but there was no inflammation or discoloration of the skin. He stated that he first perceived it about the middle of April previous, but he took little notice of it until July, when the leg began to swell below, and he suffered shooting pains down the leg, which disturbed his rest at night. His general health was bad; he could take but little food; stomach much deranged; bowels irregular, sometimes constipated, and sometimes loose, and of a dysenteric character.

As the tumour did not seem to be increasing very fast, it was thought best to give the patient rest, and endeavour to improve his health before resorting to

any operation. Under rest and opiates, the tumour remained nearly stationary for some time, and his general health improved; but about the middle of January, 1859, it suddenly enlarged, and some inflammatory action was set up. The operation by ligature was offered to the patient, as the only chance of saving his life; but as I could not offer him very strong encouragement, he declined having it made. But his sufferings increased, and on the 26th he concluded to take the chance of an operation, which I accordingly made. An incision was made from the upper edge of the tumour nearly in the course of the linea semilunaris up to the cartilage of the ribs, and the abdominal walls carefully divided down to the internal common fascia, which was peeled up from its loose attachment to the walls, and, with the peritoneum, pushed aside until the artery was uncovered. There was some difficulty in detaching these tissues at the lower part where they came in contact with the tumour and became adherent, and a small rent was made into the peritoneal cavity, but no serious injury was sustained by it. A small portion of omentum protruded once, but it was returned, and did not appear again. A common silk ligature was carried under the common iliac, by means of an aneurismal needle, and the silver wire attached to it and drawn through. This was tied like a common silk ligature, and the ends cut near the knot, and the points bent down so as not to present to the soft parts. The knot was not drawn strongly as is usual; but only sufficiently so to stop the current of blood in the artery. The wound was brought together by the twisted suture, and the patient appeared in a favourable condition. The extremity became cooler than the other, and there was some pain in it, but by the use of artificial warmth and diffusible stimulants, the circulation was gradually established, and no symptoms of gangrene appeared.

The tumour subsided very favourably, and the patient was almost entirely relieved from pain in it, and did well for several days, when the dysenteric symptoms returned with increased violence and continued until his death, which took place on the 20th February, the twenty-sixth day after the operation. The operation was on the left side, and it is probable that the displacement and handling of the descending colon, and the sigmoid flexure, increased the diseased action which already existed.

Being unwell at the time of this patient's death, I did not attend the Hospital for a day or two, and the clerk delivered the body to the wife of the deceased for burial, and no post-mortem examination was made. This was an unpardonable blunder, for it would have been of great value to have observed the manner in which the silver ligature was disposed of, and the result of a moderately light ligature of materials that will not excite ulceration of the coats of the vessel, unless the tissues are completely strangulated. I am confident that the silver thread may be applied sufficiently tight to completely interrupt the current of blood through the artery without strangulating the tissues of the vessel so as to cause its division by ulceration. If this is correct, the danger of secondary hemorrhage in tying large arteries may be entirely avoided. The danger from hemorrhage after the ligature for aneurism is so great that it has become the settled practice to use the painful, tedious, and uncertain method of compression, where it can be made, and the ligature is only resorted to when this method fails. Setting aside the danger of secondary hemorrhage, the ligature must be allowed to be the best operation. It is soon completed, and the patient receives immediate relief from pressure and pain in the tumour, which often diminishes in size and leaves a smaller amount of coagulated blood to absorb than when the circulation is arrested by degrees, and the blood in the sack is made to coagulate while it is fully distended. A common silk ligature, if applied only just tight enough to the artery to arrest the current of blood, is slow in coming away, and obliterates it as certainly as if it was tied so as to cut the inner coat of the vessel, according to the directions of Jones. When I was a student, my preceptor (the late Dr. Amos Twitchell) made experiments to test the truth of the assertion of this surgeon, that it was necessary to draw the ligature so as to cut the inner coat of the artery in order to produce adhesive inflammation, and proved that it was mere theory, and not a fact. The truth is, that adhesive inflammation does not take place in the inner surface of ligated arteries under any circumstances; at least I have never found it in the cases I have examined. When

an artery is tied in its course, so as to arrest the current of blood, a coagulum is formed on the proximal side, but not on the distal side, of the ligature, and hence it is that hemorrhage often takes place from the distal extremity, when the anastomosis and collateral circulation is free, in cases when the adhesive process has been perfectly good. The coagulum acts as a plug which is held in place or kept from being forced out by the heart's action, by the lymph that is thrown out in and around its coats so as to thicken them and hold them in the puckered condition in which the ligature places it. On the distal side, as no clot is formed, if the vessel is filled with blood, and the patient makes much exertion about the time the ligature comes away, hemorrhage will often take place, and I believe is frequently mistaken for hemorrhage from the proximal side. This mistake may cost the patient his life; for, if a ligature is applied higher or nearer the heart, it may not stop the bleeding, but lead to serious consequences; whereas, a very little compression over the sinus left by the ligature, until the granulations fill it up, renders it perfectly safe.

It is plain, however, that, when an artery is tied in its course, it is not necessary to tie it so as to make a division of its coats by ulceration, if the ligature is of silver or any material that will not cause ulceration by its presence. All that is required of the ligature in the case of aneurism is to arrest the current of blood in the artery, and this can be done without strangulating the tissues inclosed in the ligature so as to cause a division. In the case here related, as the vessel tied was so large, and the organic functions were so feebly carried on, I feel confident that hemorrhage would have taken place if the ordinary silk ligature had been used in the usual way. In this connection I will take occasion to express my sense of what is due to Dr. J. M. Sims for introducing the silver ligature, as well as establishing a successful method of operating for vesico-vaginal fistula and analogous lesions, which is mainly due to the silver suture.

Up to the time Dr. Sims laid before the profession his mode of operating for vesico-vaginal fistula, it must be admitted that no successful mode of treatment had been established, and hundreds of females labouring under this most loathsome and painful affliction were left in hopeless misery. It is true that an occasional cure was effected under favourable circumstances, but these cases were rare exceptions to the general rule. Since the method of Dr. Sims has been adopted, all the bad cases that were formerly pronounced incurable are cured with great certainty. The attention of the profession was called a few years ago to the button suture of Dr. Bozeman, of Montgomery, Alabama, which, by many, is considered an improvement, and it has been quite generally adopted. It is not my object to discuss the merits of this improvement. Dr. Sims uses the plain interrupted suture, and no one operates with more success, I believe, than he does; but if others realize more favourable results by the button suture than by the simple it is their duty to adopt it. I see nothing in this improvement that detracts from the merits of Dr. Sims, however much it may redound to the credit and honour of the inventor. It would seem that Dr. Sims thought otherwise, and setting aside all his well-founded claims to merit for his indomitable perseverance in inventing instruments and simplifying the operation, he bases them entirely upon the introduction of the silver suture. This he set forth in a paper he read before the New York Academy of Medicine, in which he may have indulged in some pardonable egotism, and unfortunately brought forward personal matters, that belonged to him and Dr. Bozeman alone. This gave the friends of Dr. Bozeman (who seemed to have been sharp critics) an excuse for a severe criticism, and they not only ridiculed his paper, but his claim to the discovery of the silver suture. Although there was in these criticisms an affectation of rendering some undefined merit to Dr. Sims, the effect with strangers was calculated to do him great injustice. It was urged (and with truth it must be admitted) that the silver and other metallic sutures were known long since. Dr. Levert, of Mobile, made experiments as long ago as 1828, and published the results (which were highly favourable) in the *American Journal of Medical Sciences* of that year, but no one acted upon the principle thus established.

When a principle is put to practical use, if it is important, many aspirants spring up for the honour of the discovery. Dr. Simpson, of Edinburgh, on read-

ing the discourse of Dr. Sims, was reminded that he had read somewhere the report of a successful case operated upon in which the silver suture was used. He instituted a correspondence on the subject, and finally found that it was reported in a London journal in the year 1835. Dr. Simpson is a very ingenious man, and ready to adopt any improvement that gives promise of value, but this case passed him unnoticed, and would, in all probability, never have been thought of again if he had not read the discourse of Dr. Sims. The remarks of Sidney Smith, in the defence of Hamilton, who established a system of education, when the critics denied the originality of the system, are very appropriate. He says: "Whether Hamilton is or is not the inventor of the system that bears his name, or what his claims to originality may be, are questions of very second-rate importance; but they merit a few observations. That man is not the first discoverer of any art who first says the thing; but he who says it so long, so loud, and so clearly that he compels mankind to hear him. The man who is so deeply impressed with the importance of the discovery that he will take no denial, but, at the risk of fortune or fame, pushes through all opposition, and is determined that what he has discovered shall not perish for the want of a fair trial. Other persons had witnessed the effect of coal gas in producing light; but Windsor worried the town with bad English for three winters before he could attract any serious attention to his views. Many persons broke stone before Macadam, but Macadam felt the importance of the discovery more strongly, stated it more clearly, persevered in it with greater tenacity, wielded his hammer, in short, with greater force than other men, and finally succeeded in bringing his plan into general use."

When Civiale brought before the profession of Paris his admirable surgical operation, called lithotrity, the critics attempted to write him down, and denied that the process of breaking down stone in the bladder was a new invention. After having proved that he was not the inventor of his instruments, they attempted to show that the instruments themselves were detestable, and further, that Civiale did not know how to use them. Civiale, however, was happy in his associations. The eminent Chaussier and Percy concluded their report upon the subject of Lithotrity, to the Academy of Science, in these words: "Lithotrity is glorious for French surgery, honourable to its inventor, and consoling to humanity;" and a writer, in reply to these critics, who would deprive Civiale of the merit of originality, says: "In effect, the only true proprietor of a surgical improvement is he who applies it successfully, all theoretical reasonings and the cavillings of chronologists to the contrary notwithstanding."

Whether Dr. Sims bases his claims for distinction upon his indomitable perseverance under repeated failures and disappointments, ill health, and other impediments, in endeavouring to establish the curability of vesico-vaginal fistula, or merely upon the introduction of the silver suture, as embracing the whole merit, he is clearly entitled to it, and these just acknowledgments no more detract from the merit of those who have made valuable improvements than those improvements detract from the merits of the original inventor.

I have made these few remarks in justice to the profession, rather than from any partiality from any individual member. Whatever an individual member may do that redounds to his honour, sheds a proportionate lustre upon the whole profession, and nothing detracts from it so much as our own bickerings and injustice to each other.—*New Orleans Med. and Surg. Journ.*, Sept. 1859.

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Inversion of the Uterus successfully reduced on the sixteenth day after the Accident.—Dr. George Mendenhall publishes (*Cincinnati Lancet and Observer*, July, 1859) an interesting case of this. The subject of it was twenty-four years of age, in good health, and the present her second accouchement. The period at which the inversion took place, or the cause of it, is not very apparent from the history. Dr. M. was not called until the sixteenth day after the accident, when he found the patient in bed, in a comfortable condition, free from pain or other special inconvenience. By examination a complete inversion was readily made out; the uterus occupied the entire vagina, and completely filled the concavity of the sacrum.

Dr. M. proceeded to reduce the organ in the following manner: The patient was laid on her back, and placed under the anæsthetic influence of a mixture of

sulphuric ether and chloroform. "The right hand was introduced, without very great difficulty, into the vagina, the body of the uterus grasped and carried upwards in a line corresponding with the axis of the pelvis, and steady pressure made in that direction, so as to put the vagina and utero-vaginal connection on the stretch. The left hand was placed on the abdomen, and the fingers against the outer edges of that portion of the uterus looking towards the cavity of the abdomen (which could be distinguished plainly), and counter-pressure was made for the double purpose of preventing injury to the utero-vaginal connections, and also for the purpose of facilitating the turning of the os and neck of the uterus over the body and fundus. I am quite certain that this manipulation increased the facility of reduction, and added to the safety of the structures involved. The cramped position of the hand was occasionally relieved by passing a large rectum bougie, which was retained against the fundus by the hand in the vagina, and thus keeping up the pressure constantly.

"The turn of the uterus commenced at the neck, and was continued along the body until it involved the fundus. While this turning was in progress, the os could be felt enveloping successive portions of the body, until the fundus was also embraced by it. As soon as this portion was well above the os, the bougie was relied upon entirely for the completion of the reduction; the latter part of which took place rapidly with the point of the bougie at the fundus, and which was enveloped by the uterus in its natural cavity, when the reduction was complete. The fundus of the uterus (inclosing the bougie) could be felt very plainly above the pubes, while the lips and neck could easily be distinguished in the vagina, by passing the fingers alongside the bougie. This instrument was left in the uterus, and an injection of fifty drops of laudanum in two ounces of starch water, administered by the rectum, as soon as the effects of the anæsthetic passed off; which was in a very short time. She said she felt quite comfortable, and had not experienced much pain in the operation; her pulse and breathing were good, and no stimulant was required. The amount of blood lost was small, although the discharge was somewhat increased."

This case, with those related by Prof. White (*American Journ. Med. Sci.*, July, 1858, p. 13), and Dr. W. T. Smith (*Ibid.*, p. 270), afford encouragement to attempt replacement in cases of inverted uterus, even after a lapse of time which has hitherto been supposed to forbid any hope of relief.

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Bibron's Antidote.—Dr. D. O. C. HEERY relates (*Atlanta Med. and Surg. Journ.*, Aug. 1859) the following case of rattlesnake bite in which he employed Bibron's Antidote with success:—

"In travelling through Southwestern Georgia, in April last, I happened at the house of Col. B. Shortly after my arrival, he informed me that one of his most valuable negroes had just been bitten by a large rattlesnake (crotallus confluentus) while returning from the field. The negro was bitten on the ankle of the left leg. The snake inflicted a very deep wound, and within five minutes after the bite, before much pain or swelling had ensued, I administered one dose of Bibron's Antidote, in two tablespoonfuls of brandy, and the symptoms almost immediately disappeared. One hour after the bite, pain and swelling returned, attended with considerable throbbing. I repeated the antidote, and in less than fifteen minutes the ankle had regained its natural appearance—all pain and swelling having vanished. Before returning, I repeated the dose a third time. In the morning he was perfectly well, and resumed his duties in the field."

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Veratrum Viride in Chorea and other Convulsive Diseases.—Dr. P. D. BAKER, of Eufaula, Ala., asserts (*Southern Med. and Surg. Journ.*, Sept. 1859) that the veratrum viride is as valuable a nervine as an antiphlogistic, and that in the treatment of certain neuroses it is unrivalled. He states that he has administered it in numerous cases of eclampsia in children with such success as to convince him of the power of this agent in arresting convulsions; indeed he believes that it is impossible for convulsions to continue after the system has been fully impressed by the remedy. He has also used it in puerperal convulsions and chorea with benefit. In short, he places more reliance upon the veratrum viride in all convulsive affections than upon any other agent of the materia medica.

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UNIVERSITY OF PENNSYLVANIA—MEDICAL DEPARTMENT.

NINETY-FOURTH SESSION (1859-60).

William Gibson, M. D., Emeritus Professor of Surgery.

Samuel Jackson, M. D.,	Professor of Institutes of Medicine.
George B. Wood, M. D.,	Professor of Theory and Practice of Medicine.
Hugh L. Hodge, M. D.,	Professor of Obstetrics and the Diseases of Women and Children.
Joseph Carson, M. D.,	Professor of Materia Medica and Pharmacy.
Robert E. Rogers, M. D.,	Professor of Chemistry.
Joseph Leidy, M. D.,	Professor of Anatomy.
Henry H. Smith, M. D.,	Professor of Surgery.

William Hunt, M. D., Demonstrator of Anatomy.

The Lectures of the Session will begin on the second Monday of October and close on the first of March.

Clinical Instruction is given throughout the Session, in the Medical Hall, by the Professors, and at the Pennsylvania and other Hospitals.

The Dissecting Rooms, under the superintendence of the Professor of Anatomy and the Demonstrator, are open from the middle of September.

The room for Operative Surgery and the Application of Bandages, &c., is open early in September and throughout the Session, under the supervision of the Professor of Surgery.

Surgical Demonstrator, C. S. BISHOP, M. D.

Fees: For the Lectures (each Professor $15), $105; Matriculation Fee (paid once only), $5; Graduation Fee, $30.

R. E. ROGERS, M. D., *Dean of the Medical Faculty, University Building.*

F. B. DICK, *Janitor, University Building.*

PENNSYLVANIA COLLEGE—MEDICAL DEPARTMENT.

NINTH STREET, BELOW LOCUST, PHILADELPHIA.

SESSION OF 1859-60.

FACULTY.

B. Howard Rand, M. D.,	Professor of	Chemistry.
Henry Hartshorne, M. D.,	"	Practice of Medicine.
Lewis D. Harlow, M. D.,	"	Obstetrics, &c.
William S. Halsey, M. D.,	"	Surgery.
Wm. Hembel Taggart, M. D.,	"	Materia Medica.
James Aitken Meigs, M. D.,	"	Institutes of Medicine.
Wm. H. Gobrecht, M. D.,	"	Anatomy.

Theodore A. Demmé, M. D., Demonstrator of Anatomy.

The Session of 1859-60 will commence on Monday, 10th of October, and continue, without intermission, until the first of March. The Commencement for conferring Degrees will take place early in March, causing as little detention of the Graduating Class, after the close of the Lectures, as possible.

There will also be an examination of candidates for graduation, on the 1st of July; the Degree, in such cases, being conferred at the ensuing Commencement in March.

The Rooms for Practical Anatomy will be open early in September.

The College Clinic will be conducted on every Wednesday and Saturday throughout the Session.

The Register of Matriculants will be open in the College Building, early in September. The Janitor will always be present at the College, to give every necessary assistance and information (as regards board, &c.) to students, on their arrival in the city.

Matriculation (paid once only), $5 00; For each Professor's ticket, $15 00; Graduation, $30 00.

LEWIS D. HARLOW, M. D., *Dean,*
No. 1023 *Vine below* 11*th Street.*

July, 1859.—2t.

JEFFERSON MEDICAL COLLEGE.

The Course of Lectures will commence on Monday, the 10th of October, and continue until the 1st of March.

ROBERT M. HUSTON, M. D., { Emeritus Professor of Materia Medica and General Therapeutics.

Institutes of Medicine, etc., ...	By Prof. ROBLEY DUNGLISON, M. D.
General, Descriptive and Surgical Anatomy, .	" JOSEPH PANCOAST, M. D.
Obstetrics and Diseases of Women and Children,	" CHARLES D. MEIGS, M. D.
Chemistry, ...	" FRANKLIN BACHE, M. D.
Institutes and Practice of Surgery, . .	" SAMUEL D. GROSS, M. D.
Materia Medica and General Therapeutics, .	" THOMAS D. MITCHELL, M. D.
Practice of Medicine, ...	" SAMUEL H. DICKSON, M. D.

Demonstrator of Anatomy, . . ELLERSLIE WALLACE, M. D.

Clinics will be held regularly during September; and every Wednesday and Saturday in October, and during the course, Medical and Surgical cases will be investigated, prescribed for, and lectured on before the Class. During the year ending March the first, 1859, a vast number of medical and surgical cases were treated, and about *two hundred and fifty* operations were performed; amongst them many major operations—as amputation of the leg, extirpation of the upper and of the lower jaw, mamma, and eye, and six cases of lithotomy.

The lectures are so arranged as to permit the student to attend the clinics of the Pennsylvania Hospital, and of the Philadelphia Hospital.

On and after the 1st of October, the dissecting-rooms will be open, under the direction of the Professor of Anatomy and the Demonstrator.

FEES:

Matriculation, which is paid only once, ...	$ 5
To each Member of the Faculty $15, ...	105
Graduation, ...	30

ROBLEY DUNGLISON, M. D.,
Dean of the Faculty.

ST. LOUIS MEDICAL COLLEGE.

THE Regular Lectures in this Institution will commence on the first day of November, 1859, and continue until March. A Preliminary Course at the College, as also Clinical Lectures at the Hospitals and the Dispensary, will be delivered without extra charge, during the month of October.

M. L. LINTON, M. D., Professor of the Principles and Practice of Medicine.

A. LITTON, M. D., Professor of Chemistry and Pharmacy.

CHARLES A. POPE, M. D., Professor of the Principles and Practice of Surgery and Clinical Surgery.

M. M. PALLEN, M. D., Professor of Obstetrics and Diseases of Women and Children.

W. M. McPHEETERS, M. D., Professor of Materia Medica and Therapeutics.

CHARLES W. STEVENS, M. D., Professor of General, Descriptive, and Surgical Anatomy.

JOHN B. JOHNSON, M. D., Professor of Clinical Medicine and Pathological Anatomy.

J. H. WATTERS, M. D., Professor of Physiology and Medical Jurisprudence.

E. H. GREGORY, M. D., Demonstrator of Anatomy.

The most ample opportunities for clinical instruction, both in Medicine and Surgery, are afforded by the several large Hospitals and Dispensary under the care of the Faculty. There is also an abundance of material for the study of Practical Anatomy.

FEES: For the entire Course, $105; Matriculating Ticket (paid but once), $5; Dissecting Ticket, $10; Hospital Tickets, gratuitous; Graduating Fee, $20.

Students or others, desiring further information, can either address the Dean, and he will forward them a descriptive pamphlet, or on arriving in the city, call upon him at his office, southwest corner of Tenth and Locust Streets, or on the Janitor of the College, corner of Seventh and Myrtle Streets.

CHARLES A. POPE, M. D., *Dean.*

May, 1859.

MEDICAL COLLEGE OF OHIO.

SESSION OF 1859–60.

FACULTY.

L. M. Lawson, M. D.,	Professor of the Theory and Practice of Medicine.
Jesse P. Judkins, M. D.,	Professor of Anatomy.
George C. Blackman, M. D.,	Professor of Principles and Practice of Surgery and Clinical Surgery.
George Mendenhall, M. D.,	Professor of Obstetrics.
C. G. Comegys, M. D.,	Professor of Institutes of Medicine.
John A. Murphy, M. D.,	Professor of Materia Medica and Therapeutics.
H. E. Foote, M. D.,	Professor of Chemistry and Toxicology.
B. F. Richardson, M. D.,	Professor of Diseases of Women and Children.
James Graham, M. D.,	Professor of Clinical Medicine.
William Clendenin, M. D.,	Demonstrator of Anatomy.

L. M. Lawson, M. D., Dean, *Northwest corner of Sixth and Walnut Streets.*
George Mendenhall, M. D., Registrar, 197 *Fourth Street.*

OPENING OF THE COURSE.

The *regular course* will open on the 18th of October, and terminate on the last of February. Students are earnestly advised to be early in attendance, especially those who expect to be candidates for graduation; as credit for a full course cannot be allowed unless the pupil matriculates at an early period, and observes regular attendance on the lectures. Clinical lectures will be delivered at the Commercial Hospital and City Dispensary during September and October, previous to the commencement of the regular course.

The Public Commencement will take place early in March, with as little delay after the close of lectures as practicable.

FEES.

For the whole course	$90 00
Dissecting Ticket	6 00
Graduation Fee	25 00

The student can take one or more tickets, as may suit his purposes.

The Dissecting Ticket is optional, except that the candidates are required to take it once.

Students, on arriving in the city, by calling at the College (on Sixth Street, between Vine and Race), will be conducted to good boarding-houses, where they can be accommodated with board at from $2 50 to $4 00 per week.

Further information may be obtained by addressing

L. M. LAWSON, M. D., *Dean.*

MEDICAL COLLEGE OF VIRGINIA.

SESSION OF 1859–'60.

The Annual Course of Lectures will commence on the first Monday in October, and continue until the 1st of March.

Charles Bell Gibson, M. D.,	Professor of Surgery and Surgical Anatomy.
David H. Tucker, M. D.,	Professor of Theory and Practice of Medicine.
Beverley R. Wellford, M.D.,	Professor of Materia Medica and Therapeutics.
Arthur E. Peticolas, M. D.,	Professor of Anatomy.
Levin S. Joynes, M. D.,	Professor of Institutes of Medicine and Medical Jurisprudence.
James H. Conway, M. D.,	Professor of Obstetrics and Diseases of Women and Children.
James B. McCaw, M. D.,	Professor of Chemistry and Pharmacy.
Marion Howard, M. D.,	Demonstrator of Anatomy.

The study of Practical Anatomy may be prosecuted with the most ample facilities, and at a very trifling expense.

Clinical Instruction will be given in the Infirmary connected with the College, which is under the same roof with the Lecture-rooms, and is at all times well filled with Medical and Surgical cases. Students also enjoy the Clinical facilities afforded by the Richmond Almshouse, which is under the medical charge of one of the Professors.

A Prize of *One Hundred Dollars*, offered by Dr. Thomas D. Warren, of North Carolina, will be awarded to the Member of the Graduating Class who shall present to the Faculty the *best Essay* on any medical subject.

Fees.—Matriculation, $5; Ticket of each Professor, $15; Graduation, $25.

L. S. JOYNES, M. D.,
Dean of the Faculty.

HARVARD UNIVERSITY.

MASSACHUSETTS MEDICAL COLLEGE.

The Annual Course of the Medical Lectures of Harvard University will commence at the Massachusetts Medical College, in North Grove Street, Boston, on the first Wednesday of November, 1859. The regular course will be as follows:—

D. Humphreys Storer, M. D.,	Professor of Obstetrics and Medical Jurisprudence.
John B. S. Jackson, M. D.,	Professor of Morbid Anatomy.
Henry J. Bowditch, M. D.,	Professor of Clinical Medicine.
Oliver W. Holmes, M. D.,	Professor of Anatomy and Physiology.
George C. Shattuck, M. D.,	Professor of the Theory and Practice of Physic.
Henry J. Bigelow, M. D.,	Professor of Surgery.
John Bacon, M. D.,	Professor of Chemistry.
Edward H. Clarke, M. D.,	Professor of Materia Medica.

Richard M. Hodges, M. D., Demonstrator.

Clinical Medical and Surgical Instruction is given at the Massachusetts General Hospital, with surgical operations.

Collateral special medical instruction will also be given at the Hospital by lectures and otherwise, by Drs. Bowditch, Abbot, and Ellis. Abundant material is afforded for the study of Practical Anatomy. The room devoted to this department is open day and evening, and lighted by gas.

Fees for the Lectures $80. Matriculation Fee $3. Graduation Fee $20.

Good Board can be obtained at $2 50 to $5 per week. Boarding places provided on application to the Janitor at the College.

Students are requested, upon coming to Boston, to call upon the Dean.

D. HUMPHREYS STORER, Dean of the Faculty,
October 1, 1859. *No.* 132 *Tremont Street, Boston.*

BOYLSTON MEDICAL PRIZE QUESTIONS.

The Boylston Medical Committee, appointed by the President and Fellows of Harvard University, consists of the following Physicians:—

Edward Reynolds, M. D.	J. Mason Warren, M. D.	John Jeffries, M. D.
D. H. Storer, M. D.	S. D. Townsend, M. D.	Charles G. Putnam, M. D.
J. B. S. Jackson, M. D.	Morrill Wyman, M. D.	Henry J. Bigelow, M. D.

At the Annual Meeting of the Committee, on Wednesday, August 3, 1859, a premium of Sixty Dollars, or a gold medal of that value, was awarded to Calvin Ellis, M. D., of Boston, for the best dissertation on the following question:—

Tubercle—its Pathology, and especially its Relation to Inflammation.

No premium was awarded for either of the dissertations on the question—

New and useful views upon any subject in Medicine and Surgery.

The questions for 1860 are:—

1. *How far does the Microscope assist us in Surgical Diagnosis?*
2. *The Value and the Fallacy of Statistics in the Observation of Disease.*

Dissertations on these subjects must be transmitted, post paid, to Edward Reynolds, M. D., *on* or *before* the *first Wednesday* of April, 1860.

The following questions are proposed for 1861:—

1. *Excision of Joints.*
2. *Diagnosis and Treatment of Chronic Pleurisy.*

Dissertations on these subjects must be transmitted as above, *on* or *before* the *first Wednesday* of April, 1861.

The author of the best dissertation considered worthy of a premium on either of the subjects for 1860, will be entitled to a premium of *ninety dollars*, or a gold medal of that value, at his option: and for 1861, *sixty dollars*, or a gold medal of that value.

Each dissertation must be accompanied by a sealed packet, on which shall be written some device or sentence, and within which shall be inclosed the author's name and residence. The same device or sentence, is to be written on the dissertation to which the packet is attached.

The writer of each dissertation is expected to transmit his communication to the Chairman of the Committee, in a legible handwriting, within the time specified.

All unsuccessful dissertations are deposited with the Secretary, from whom they may be obtained, with the sealed packet unopened, if called for within one year after they have been received.

By an order adopted in 1826, the Secretary was directed to publish annually the following votes:—

1st. That the Board do not consider themselves as approving the doctrines contained in any of the dissertations to which premiums may be adjudged.

2d. That in case of publication of a successful dissertation, the author be considered as bound to print the above vote in connection therewith.

J. MASON WARREN,
Secretary.

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